

# 13<sup>th</sup> Interventional MRI Symposium 2022

October 14 - 15, 2022

Leipzig, Germany

[www.imri2020.org](http://www.imri2020.org)



endorsed by



Dear colleagues and friends,

After two postponements due to the Covid-19 pandemic, we are eagerly looking forward to the October 2022 on-site iMRI Symposium in Leipzig. After the last gathering in 2018 in Boston, this will mark the reunion of the interventional MRI community with opportunities to interact with opinion leaders and innovators in the field, meet old friends or find new ones. This event is jointly organized by the University of Leipzig, the Department of Radiology at Brigham and Women's Hospital, Harvard Medical School in Boston, and the Department of Radiology and Radiological Science at Johns Hopkins University in Baltimore – in close cooperation with Hannover Medical School, University of Magdeburg and Emory Healthcare, Atlanta.

The iMRI Symposium provides an ideal platform for researchers, clinicians and healthcare professionals alike to present their latest results. Sessions with both technical and clinical topics are composed of lectures by invited speakers and proffered scientific papers. The meeting is endorsed by the ISMRM (International Society for Magnetic Resonance in Medicine) and the ESMRMB (European Society for Magnetic Resonance in Medicine and Biology) and supported by the Ferenc Jolesz National Center for Advanced Technologies Image Guided Therapy (NCIGT) at Harvard Medical School and the Innovation Center for Computer Assisted Surgery (ICCAS) at University of Leipzig.

We are hoping to see you soon in Leipzig!

### Venue

**The Westin Leipzig**  
**Gerberstrasse 15**  
**04105 Leipzig**  
**Germany**  
**[www.westinleipzig.com](http://www.westinleipzig.com)**

### Congress Agency

**akd congress & events**  
**Phone: +49 (341) 268276-35 / -36**  
**Email: [info@akd-congress.de](mailto:info@akd-congress.de)**



## General Chairs

Clare Tempany, Boston, USA

Jonathan S. Lewin, Atlanta, USA

Thomas Kahn, Leipzig, Germany

## Co-Directors

Harald Busse, Leipzig, Germany

Timm Denecke, Leipzig, Germany

Andreas Melzer, Leipzig, Germany

Michael Moche, Leipzig, Germany

Frank Wacker, Hannover, Germany

## Scientific Program Committee

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Thomas Kahn, Leipzig, Germany

Maciej Pech, Magdeburg, Germany

Georg Rose, Magdeburg, Germany

Oliver Speck, Magdeburg, Germany

Frank Wacker, Hannover, Germany

Clifford R. Weiss, Baltimore, USA

## Faculty

Roberto Blanco Sequeiros, Turku, Finland

Jeff Bulte, Baltimore, USA

Harald Busse, Leipzig, Germany

Jan Fritz, Baltimore, USA

Jurgen Fütterer, Nijmegen, The Netherlands

Afshin Gangi, Strasbourg, France

Nobuhiko Hata, Boston, USA

Ron Kikinis, Boston, USA

Kagayaki Kuroda, Hiratsuka, Japan

Nathan McDannold, Boston, USA

Arya Nabavi, Hannover, Germany

Kuberan Pushparajah, London, UK

Jens Ricke, Munich, Germany

Alexander Schaudinn, Leipzig, Germany

Kemal Tuncali, Boston, USA

Arndt Vogel, Hannover, Germany

Frank Wacker, Hannover, Germany

Clifford R. Weiss, Baltimore, USA

Bradford Wood, Bethesda, USA

David Woodrum, Rochester, USA



# TOPICS

## FRIDAY, OCTOBER 14

- WELCOME** ● 08:00 am – 08:45 am  
Ferenc Jolesz Memorial Lecture
- SESSION I** ● 08:45 am – 10:05 am  
General Issues – Neuro
- SESSION II** ● 10:35 am – 12:35 pm  
Prostate
- 12:35 pm – 01:05 pm  
Lunch Symposium  
Siemens Healthineers
- SESSION III** ● 01:45 pm – 03:00 pm  
Poster Presentation
- SESSION IV** ● 03:30 pm – 05:35 pm  
MR Thermometry – Technology

## SATURDAY, OCTOBER 15

- SESSION V** ● 08:15 am – 10:10 am  
Neuro – Ablation – Robotics
- SESSION VI** ● 10:40 am – 12:25 pm  
Cardiovascular
- SESSION VII** ● 01:45 pm – 02:35 pm  
Technology – Management
- SESSION VIII** ● 03:15 pm – 04:10 pm  
Ablation
- SESSION IX** ● 04:10 pm – 05:20 pm  
Focused Ultrasound

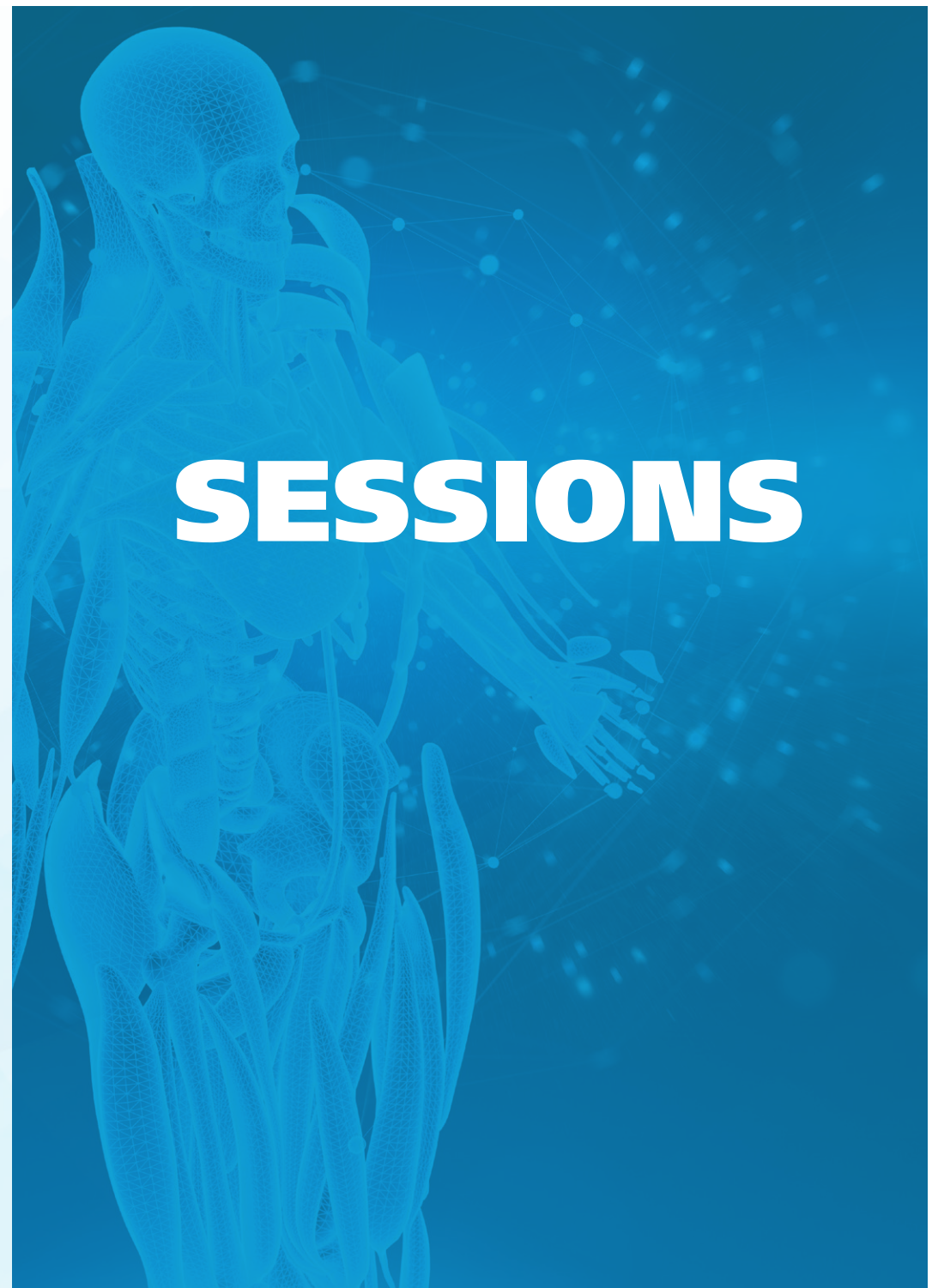
# SCIENTIFIC PROGRAM OBJECTIVES

Friday, October 14 – Saturday, October 15, 2022

Upon completion of the scientific meeting, participants should be able to:

- Explain the underlying concepts and related methods in interventional and intraoperative MRI
- List specific indications and applications for different clinical questions
- Identify the advantages and limitations of interventional MRI approaches
- Describe key research areas and clinical findings
- Evaluate trends and developments within the field

**This program is certified by the Saxonian medical association with 18 credit points category A**



# WELCOME

Friday, October 14, 08:00 am – 08:45 am

**08:00 Welcoming address**

C. Tempany, J. S. Lewin, Th. Kahn

C. Josten, Medical Director, University Hospital Leipzig

**08:15 Ferenc Jolesz Memorial Lecture  
The impact of artificial intelligence on iMRI**

Ron Kikinis

Harvard Medical School

Boston, MA, USA

## SESSION I

Friday, October 14, 08:45 am – 10:05 am

### GENERAL ISSUES – NEURO

**Moderators:** A. Melzer, Leipzig, Germany  
A. Nabavi, Hannover, Germany

**08:45 Why MRI for interventions? Cost effectiveness, workflow and treatment optimization (V-01)**

J. Ricke

Munich, Germany

**09:00 MR-guided neurosurgery – current status and future perspectives (V-02)**

A. Nabavi

Hannover, Germany

**09:15 Passive motor fMRI for intraoperative 3T MRI: first results (V-03)**

G. Hangel, J. Wais, M. Tomschick, P. Pruckner, C. Dorfer, G. Kaspiran, K. Rössler

Vienna, Austria

**09:25 Transcranial MR-guided focused ultrasound surgery (V-04)**

N. McDannold

Boston, MA, USA

**09:40 MRI and MPI of intra-arterial stem cell administration (V-05)**

A. Shakeri-Zadeh, S. Kuddannaya, A. Bibic, P. Walczak,

J. Bulte

Baltimore, MD, USA

**09:55 MR-guided vagal cryoablation for the treatment of obesity in a canine model (V-06)**

D. Kraitchman, T. Ehtiati, C. Rice, A. Khalil, Y. Fu, C. Weiss

Baltimore, MD, USA

**10:05 – Coffee Break**

**10:35**



## SESSION II

Friday, October 14, 10:35 am – 12:35 pm

### PROSTATE

**Moderators:** A. Gangi, Strasbourg, France  
J. Ricke, Munich, Germany

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**10:35 MR-guided prostate biopsies (V-07)**

A. Schaudinn  
Leipzig, Germany

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**10:50 Comparison of prostatic lesion conspicuity using a fast balanced SSFP sequence to shorten in-bore robotic transrectal MRI-guided biopsy: a feasibility study (V-08)**

J. C. Vilanova, J. Puig, A. Pérez de Tudela, M. Planas, S. Sala,  
S. ThióHenestrosa, J. Artazkoz  
Girona, Spain

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**11:00 MR-guided prostate interventions – update on focal therapy with MRgFUS (V-09)**

C. Tempany  
Boston, MA, USA

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**11:15 MR-guided focused ultrasound ablation for intermediate risk prostate cancer (V-10)**

S. Ghai, N. Perlis, K. Corr, R. Chan, S. McCluskey, T. van der Kwast,  
A. Finelli  
Toronto, Canada

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**11:25 MR-guided prostate interventions – the Mayo experience (V-11)**

D. Woodrum  
Rochester, MN, USA

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**11:40 MR-guided prostate interventions – the Nijmegen experience (V-12)**

J. Fütterer  
Nijmegen, The Netherlands

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**11:55 MR-guided cryoablation of oligo-metastatic prostate cancer to the obturator lymph nodes (V-13)**

D. Woodrum, S. Thompson, D. Adamo, D. Lomas, C. Favazza,  
A. Lu, L. Mynderse, E. Kwon, M. A. Tavallaei, M. K. Lavdas, M.  
Drangova  
Rochester, MN, USA

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**12:05 AI-based prediction of iceball boundaries in focal cryoablation of prostate cancer (V-14)**

P. Moreira, K. Tuncali, C. Tempany, J. Tokuda  
Boston, MA, USA

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**12:15 MRI-guided focal laser ablation (MRgFLA) for localized intermediate-risk prostate cancer – results of a phase II trial (V-15)**

S. Ghai, N. Perlis, K. Corr, A. Zisman, M. Gertner, R. Chan, S. McCluskey, T. van der Kwast, A. Finelli  
Toronto, Canada

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**12:25 Use of salvage MRI-guided focal or integrated boost high dose rate brachytherapy for recurrent prostate cancer (V-16)**

I. Navarro-Domenech, C. Ménard, Z. Liu, L. Joseph, M. Barkati, A. Berlin, G. Delouya, D. Taussky, M.-C. Beauchemin, B. Nicolas, S. Kadoury, A. Rink, S. Raman, A. Sundaramurthy, R. Weersink, D. Beliveau-Nadeau, J. Helou, P. Chung  
Toronto, Canada

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**12:35 – Lunch Break**

**01:45**

**12:35 – Lunch Symposium**

**01:05 Siemens Healthineers**

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## SESSION III

**Friday, October 14, 01:45 pm – 03:00 pm**

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**01:45 – Poster Presentation**

**03:00** with presenters expected to remain with their posters throughout the session to engage in discussion with attendees

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**03:00 – Coffee Break**

**03:30**

## SESSION IV

**Friday, October 14, 03:30 pm – 05:35 pm**

### MR THERMOMETRY – TECHNOLOGY

**Moderators:** J. Fütterer, Nijmegen, The Netherlands  
O. Speck, Magdeburg, Germany

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**03:30 How accurate and reliable is MR-thermometry? (V-17)**

K. Kuroda  
Hiratsuka, Japan

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**03:45 Prospective phase correction – A novel approach to phase drift correction in proton-resonance-frequency-shift thermometry with non-cartesian sequences (V-18)**

O. Belker, K. Meyer zu Hartlage, M. Gutberlet, C. Löning C., D. Reimert, F. Wacker, B. Hensen  
Hannover, Magdeburg, Germany

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**03:55 Accuracy of MRI real-time 3D temperature mapping during microwave heating – in-vitro results in gel phantoms (V-19)**

O. Dietrich, S. Lentini, O. Öcal, P. Bour, T. Faller, J. Ricke, M. Seidensticker  
Munich, Germany  
Pessac, France

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**04:05 Susceptibility-corrected proton-resonance-frequency-shift (PRFS)-based magnetic resonance (MR) thermometry for monitoring microwave ablation (MWA) in the porcine liver (V-20)**

B. Hensen, S. Hellms, C. Werlein, D. Jonigk, P. A. Gronski, I. Bruesch, R. Rumpel, E.-M. Wittauer, F. W. R. Vondran, D. L. Parker, F. Wacker, M. Gutberlet  
Hannover, Germany  
Salt Lake City, UT, USA

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**04:15 Using magnetic resonance fingerprinting for proton-resonance-frequency-shift-based temperature monitoring of microwave ablation (V-21)**

M. Gutt, J. J. Löning Caballero, D. Horstmann, F. Wacker, B. Hensen, M. Gutberlet  
Hannover, Germany

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**04:25 A robust motion compensation algorithm for volumetric MR-temperature monitoring during microwave ablation of liver tumor in patients (V-22)**

V. Ozenne, B. Quesson, P. Bour, T. Faller, O. Öcal, S. Lentini, M. Seidensticker, O. Dietrich  
Bordeaux, Pessac, France  
Munich, Germany

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**04:35 Clinical experience of 3D MR thermometry for liver microwave ablation (V-23)**

J. Tokuda, V. M. Levesque, M. C. Bernardes, R. Seethamraju, K. Tuncali  
Boston, MA, USA

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**04:45 Performance of advanced DWI and MR thermometry near interventional needle-like devices (V-24)**

J. H. Holmes, C. J. Buelo, R. Geng, M. Tarasek, D. T. Yeo, C. L. Brace, D. Hernando, A. Faacks, S. A. Wells  
Iowa City, IA, USA,  
Madison, WI, USA,  
Niskayuna, NY, USA

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**04:55 Real-time automatic temperature regulation during in-vivo MRI-guided laser-induced thermotherapy (MR-LITT) (V-25)**

M. Desclides, V. Ozenne, P. Bour, G. Machinet, C. Pierre, S. Chemouny, B. Quesson  
Bordeaux, Pessac, Talence, France

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**05:05 Feasibility of PRF thermometry at 0.55 T (V-26)**

W. Majeed, A. Krafft, H. Odéen, D. Parker, J. Pang, H. Bhat  
Malvern, PA, USA  
Salt Lake City, UT, USA  
Erlangen, Germany

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**05:15 Implementation of a real-time 3D-thermometry pipeline in Gadgetron for hepatic thermal ablation (V-27, Video)**

D. Horstmann, K. Meyer zu Hartlage, D. Reimert, J. J. Löning, C. Othmar Belker, F. Wacker, B. Hensen, M. Gutberlet  
Hannover, Germany

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**05:25**    **A new versatile MR-guided high-intensity focused ultrasound (MRgHIFU) device: System performance assessment and clinical feasibility (V-28)**

P. Cabras, P. Auloge, E. Dumont, B. Wach, E. Breton, A. Gangi, J. Vappou  
Strasbourg, Pessac, France

## SESSION V

**Saturday, October 15, 08:15 am – 10:10 am**

### *NEURO – ABLATION - ROBOTICS*

**Moderators:**    R. Blanco-Sequeiros, Turku, Finland  
                          N. Hata, Boston, USA

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**08:15**    **Interventional MR neurography – applied precision medicine (V-29)**

J. Fritz  
New York, NY, USA

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**08:30**    **Retroperitoneal lateral femoral cutaneous nerve blocks in the workup of thigh pain: performance analysis of a new technique (V-30)**

D. Dalili, S. Ahlawat, D. Shakoor, A. Rashidi, A. Isaac, J. Fritz  
London, United Kingdom  
Baltimore, MD, USA  
New Haven, CT, USA  
New York, NY, USA

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**08:40**    **Accurate targeting in lumbar and sacral nerve root infiltrations using MRI guidance, with 5-month follow-up (V-31)**

P. C. Guillemin, R. Salomir, O. Lorton, E. Maturana, A. Stöckli, P.A. Poletti, N. Lauper, D. Dominguez, S. Boudabbous, M. Scheffler  
Geneva, Switzerland

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**08:50**    **3-Tesla MR neurography guided nerve blocks for the treatment of pudendal neuralgia (V-32)**

D. Dalili, S. Ahlawat, D. A. Isaac, A. Rashidi, A. Haj-Mirzaian, J. Fritz  
London, United Kingdom  
New York, NY, USA

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**09:00**    **MR-guided ablations in high-field strength MRI (V-33)**

K. Tuncali  
Boston, MA, USA

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**09:15 MRI-guided radiofrequency ablation of small HCC nodules ( $d \leq 12$  mm) in pretreated livers – use of the gadoxetic-acid plateau phase (V-34)**

S. Ebel, H. J. Meyer, G. Prasse, D. Seehofer, T. Berg, H. Busse,  
A. Hofmann, H. Gößmann, T. Denecke  
Leipzig, Germany

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**09:25 MRI-guided robotic interventions - pathway to autonomous and AI-assisted approach (V-35)**

N. Hata  
Boston, MA, USA

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**09:40 Demonstration of versatile anatomically designed instrument alignment units for the remote operated  $\mu$ RIGS instrument micropositioning system (V-36)**

R. Odenbach, I. Fomin, N. Thoma, B. Hensen, F. Wacker, G. Rose  
Magdeburg, Hannover, Germany

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**09:50 MRI-compatible low profile robots for in-bore interventions (V-37)**

K. Cleary, K. Sharma, E. Fischer, C. Dumoulin, G. Li, J. Fritz,  
A. Gunderman, Y. Chen, R. Monfaredi, D. Stoianovici,  
I. Iordachita  
Washington, DC, USA  
Cincinnati, OH, USA  
New York, NY, USA  
Atlanta, GA, USA  
Baltimore, MD, USA

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**10:00 A piezo-driven MR-compatible assistance system for image-guided interventions (eGantryMate) (V-38)**

A. Reichert, A. Caglar Özen, S. Reiss, T. Lottner, N. Verloh,  
S. Milosavljevic, M. Vogeles, M. Bock  
Freiburg, Germany  
Kitzbühel, Austria

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**10:10 – Coffee Break**

**10:40**



## SESSION VI

Saturday, October 15, 10:40 am – 12:25 pm

### CARDIOVASCULAR

**Moderators:** F. Wacker, Hannover, Germany  
C. Weiss, Baltimore, USA

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**10:40 MR-guided cardiac interventions (V-39)**

K. Pushparajah  
London, Great Britain

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**10:55 Tissue characterization of the acute ablation lesion directly after CMR-guided atrial flutter ablation (V-40)**

G. P. Bijvoet, H. M. J. M. Nies, R. J. Holtackers, V. M. Smit-Fun,  
J. Smink, D. Linz, K. Vernooij, J. E. Wildberger, R. Nijveldt,  
S. M. Chaldoupi, C. Muhl  
Maastricht, Best, Nijmegen, The Netherlands

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**11:05 Towards MRI-guided cardiovascular interventions and focused ultrasound neuromodulation (V-41, Video)**

C. M. Reich, D. Gholami Bajestani, C. Mulik, G. Schäfers, V. Hammersen, S. Schauer, M. Schmid, A. Hegel, K. Hoeger, E. Pruy, M. Steinmetz, L. Landgraf, T. Jochimsen, O. Sabri, A. Melzer  
Leipzig, Gelsenkirchen, Dettingen an der Ems, Pforzheim, Weßling, Göttingen, Germany

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**11:15 Deep artifact suppression for in-line real-time reconstruction of accelerated complex MR data: Application to interventional cardiac MR thermometry (V-42)**

O. Jaubert, V. Ozenne, M. Yon, J. Montalt-Tordera, J. Steeden,  
V. Muthurangu, B. Quesson  
London, Great Britain  
Bordeaux, France

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**11:25 MR-guided coronary catheterization in a porcine model at 3 T: success rate and learning curve (V-43)**

S. Reiss, T. Lottner, T. Heidt, A. Özen, C. von zur Mühlen, M. Bock  
Freiburg, Germany

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**11:35 MR-guided treatment of vascular malformations (V-44)**

C. Weiss  
Baltimore, MD, USA

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**11:50 Combined 3D printed and silicone moulded vascular phantoms to develop and train catheter based MRI-guided interventions (V-45)**

D. G. Bajestani, C. Martin Reich, C. Mulik, A. Melzer  
Leipzig, Germany

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**12:00 Artifact exploration of metallic and non-metallic guidewires at 0.55 T, 1.5 T, and 3 T MR systems (V-46)**

W. B. Buchenberg, K. Düring, M. Rube, A. J. Krafft  
Krün, Erlangen, Germany

**12:10 MR-guided drug delivery (V-47)**

B. Wood

Bethesda, MD, USA

**12:25 – Lunch Break**

**01:45**

## SESSION VII

**Saturday, October 15, 01:45 pm – 02:35 pm**

### TECHNOLOGY – MANAGEMENT

**Moderators:** G. Rose, Magdeburg, Germany

B. Wood, Bethesda, USA

**01:45 Techniques and devices for interventional MRI guidance (V-48)**

H. Busse

Leipzig, Germany

**02:00 Intensity-based tracking technique to register devices in MRI-guided procedures (V-49)**

I. Fomin, R. Kowal, M. Gutberlet, B. Hensen, F. Wacker, O. Speck, G. Rose

Magdeburg, Hannover, Germany

**02:10 Testing of a transperineal guide grid for MR guided prostate procedures using optical and fiducial fusion (V-50)**

D. Woodrum, S. Thompson, D. Adamo, C. Favazza, A. Lu, P. Foroughi, A. Demir, K. Harlan, L. Mynderse

Rochester, MN, USA

**02:20 Development of a clinical interventional MRI service at Mayo Clinic Rochester: 2009-2021 (V-51)**

S. M. Thompson, D. A. Adamo, E. M. Knavel Koepsel, B. T. Welch, D. Lomas, D. R. Barker, D. F. Ekrem, P. L. Hanson, W. S. Stenzel, K. J. Gehling, M. Eggert, L. M. Cranston, D. L. Howe-Clayton, D. Berg, P. Callahan, E. M. Hoffman, T. B. Curry, C. P. Favazza, A. Lu, K. R. Gorny, J. Felmlee, L. A. Mynderse, D. A. Woodrum

Rochester, MN, USA

**02:35 – Coffee Break**

**03:15**

## SESSION VIII

Saturday, October 15, 03:15 pm – 04:10 pm

### ABLATION

**Moderators:** J. Fritz, New York, USA  
D. Woodrum, Rochester, USA  
(Session VIII and IX)

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**03:15 MR-guided abdominal interventions (V-52)**

F. Wacker  
Hannover, Germany

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**03:30 Ablation and immunotherapy – a GI oncologists view (V-53)**

A. Vogel  
Hannover, Germany

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**03:45 MR-guided cryotherapy – state-of-the-art (V-54)**

A. Gangi  
Strasbourg, France

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**04:00 Extreme MR ablation cases: The power of MRI-guidance (V-55)**

D.A. Woodrum, S.M. Thompson, D.A. Adamo, D. Lomas, C.P. Favacca, A. Lu, L. Mynderse  
Rochester, MN; USA

## Session IX

Saturday, October 15, 04:10 – 05:20 pm

### FOCUSED ULTRASOUND JOINT SESSION WITH THE EUROPEAN FOCUSED ULTRASOUND CHARITABLE SOCIETY (EUFUS)

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**04:10 MR-guided focused ultrasound in musculoskeletal diseases (V-56)**

R. Blanco-Sequeiros  
Oulu, Finland

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**04:25 Retrospective analysis of MR-guided high intensity focused ultrasound (MRgFUS) in 65 patients with symptomatic lumbosacral facet joint arthritis (V-57)**

D. Dux, M. Dux, C. Stroszczynski, L. Beyer  
Hannover, Frankfurt, Regensburg, Potsdam, Germany

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**04:35 Assessment of intercostal sonication capabilities of a dedicated transducer by MR-ARFI/thermometry (V-58)**

F. Dabrin, M. Guyot, V. Ozenne, S. Chemouny, P. Bour, B. Quesson  
Pessac, Bordeaux, France

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**04:45 MR-HIFU therapy of uterine fibroids – experience within an interdisciplinary fibroid center (V-59)**

H. Surup, J. Leonhardi, N. Bailis, C. Weisgerber, R. Handzel, S. Stark, B. Aktas, M. Martin, A. Melzer, H. Busse, S. Ebel, T. Denecke  
Leipzig, Germany

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**04:55**    **Combination of MRI-guided focused ultrasound and radiation therapy - experimental rodent study (V-60)**

X. Zhang, S. Greiser, F. Lange, R. van Gorkum, M. Fournelle, D. Speicher, S. Tretbar, A. Melzer, L. Landgraf  
Leipzig, St. Ingbert, Germany  
Zürich, Switzerland

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**05:05**    **Validation of the accuracy of a new transcostal phased-array HIFU transducer dedicated to hepatic ablation (V-61)**

O. Lorton, P. C. Guillemin, Y. M'Rad, A. Peloso, S. Boudabbous, R. Holman, P. A. Poletti, A. Ricoeur, R. Salomir  
Geneva, Switzerland

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**05:15**    **Poster Awards and Conclusions**

C. Tempany, J. S. Lewin, Th. Kahn

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**05:20**    **Adjourn**



# POSTERS

## GENERAL ISSUES

### P-01

#### **Towards a specialized software for interventional radiology**

J. Alpers, S. Balakrishnan, M. J. Soloman, L. Polenz, J. S. Sánchez López, M. Becker, M. Pech, F. Wacker, B. Hensen  
Magdeburg, Hannover, Germany

## NEURO

### P-02

#### **Lateral femoral cutaneous nerve cryoablation for the treatment of meralgia paresthetica: first results of a pilot study**

S. Walter, D. Dalili, J. Fritz  
New York, NY, USA  
London, United Kingdom

### P-03

#### **3 Tesla selective MR neurography-guided anterior femoral cutaneous nerve blocks for diagnosing anterior thigh neuralgia**

D. Dalili, S. Ahlawat, A. Isaac, A. Rashidi, J. Fritz  
London, United Kingdom  
Baltimore, MD, USA  
New York, NY, USA

### P-04

#### **One-stop-shop 3-Tesla MRI and MR-guided MR arthrography of the shoulder: A clinical practice evaluation with MSK fellows**

D. Dalili, A. Isaac, J. Fritz  
London, United Kingdom  
New York, NY, USA

## PROSTATE

### P-05

#### **Focal MR-guided high-dose-rate brachytherapy for localized prostate cancer: A prospective clinical trial**

E. Gutierrez, M. Ramotar, J. Helou, S. Raman, R. Glicksman, A. Rink, R. Weersink, P. Chung, A. Berlin  
Toronto, Canada

### P-06

#### **Comparison of preprocedural and intraprocedural distances of the urethra to the prostatic capsule when performing prostate ablation with the TULSA-PRO device**

D. Sella, J. Legout, A. Montazeri, C. Dora, G. Frey  
Jacksonville, FL, USA

## MR THERMOMETRY

### P-07

#### Estimating uncertainty of 3D ablation zones using MR thermometry

S. Schröer, M. Gutberlet, K. Meyer zu Hartlage, J. Löning Caballero,  
F. Wacker, B. Hensen  
Hannover, Germany

### P-08

#### Higher resolution T1-weighted imaging of a liver lesion: a step to correlate thermal dose and lesion extent

T. Faller, D. El Hamrani, P. Bour, C. Marcelin, M. Guyot, V. Ozenne, B. Quesson  
Pessac, Bordeaux, France

### P-09

#### Rapid 3D post-ablation assessment of thermal ablation using accelerated wave-encoding MRI

Q. Lebret, P. Bour, V. Ozenne, B. Quesson  
Bordeaux, France

### P-10

#### Real time volumetric MR-temperature monitoring during microwave ablation of a patient with hepatocellular carcinoma

O. Öcal, S. Lentini, P. Bour, T. Faller, J. Ricke, O. Dietrich, M. Seidensticker  
Munich, Germany  
Pessac, France

### P-11

#### Echo-time selection in PRFS MR thermometry to minimize errors in adipose tissues

A. Josset, J. Vappou, K. Choquet, O. Ishak, E. Breton  
Strasbourg, France

## FOCUSED ULTRASOUND

### P-12

#### Assessment of MR compatibility of focused ultrasound systems

N. Evripidou, M. Giannakou, C. Damianou  
Limassol, Cyprus

### P-13

#### Design of a new MR-compatible HIFU device for intercostal sonication into the heart

M. Guyot, E. Dumont, B. Quesson  
Pessac, Bordeaux, France

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#### Combination of MRI-guided HIFU, bioluminescence imaging and transgenic mouse model to assess efficiency of noninvasive thermal therapies for solid tumors and their microenvironments

D. El Hamran, P. Jeanjean, C. Genevois, F. Couillaud, B. Quesson  
Bordeaux, France



**P-15****MR-guided high-intensity focused ultrasound therapy monitoring using transient supersonic shear wave MR elastography**

O. Ishak, E. Breton, K. Choquet, A. Josset, P. Cabras, J. Vappou  
Pessac, Strasbourg, France

**P-16****MR-HIFU as treatment option for desmoid tumors in the abdominal wall: clinical setup and first results**

J. Leonhardi, H. Surup, J. Donig, N. Bailis, A. Hoffmeister, T. Schönherr,  
S. Niebisch, I. Gockel, A. Melzer, M. Martin, S. Ebel, H. Gößmann, H. Busse,  
T. Denecke  
Leipzig, Germany

**ROBOTICS – CARDIOVASCULAR –  
LYMPHANGIOGRAPHY****P-17****A simple MRI-guided robotic system for breast biopsy**

A. Antonioua, M. Giannakoub, C. Damianoua  
Limassol, Cyprus

**P-18****Prospective observational study of pain severity and pain interference outcomes following percutaneous MRI-guided laser ablation or cryoablation for focal painful peripheral, soft tissue vascular malformations: 12-month outcomes**

S. M. Thompson, E. M. Knavel Koepsel, G. M. Powell, E. C. Bendel, H. Bjarnason S. F. Polites, D. A. Adamo, D. L. Howe-Clayton, C. P. Favazza, A. Lu, K. Anderson, M. Tollefson, D. Woodrum  
Rochester, MN, USA  
Madison, WI, USA

**P-19****MRI-guided conventional catheter ablation of isthmus-dependent atrial flutter using active catheter imaging**

S. Ulbrich, Y. Huo, J. Tomala, M. Wagner, U. Richter, L. Pu, J. Mayer, A. Zedda, A. J. Krafft, K. Lindborg, C. Piorkowski, T. Gaspar  
Dresden, Erlangen, Germany  
Burnsville, MN, USA

**P-20****MRI-driven endovascular thrombectomy**

M. F. Phelan III, M. Sitti  
Pittsburgh, PA, USA  
Zurich, Switzerland  
Istanbul, Turkey

**P-21****Peripheral MR lymphangiography: Integration into clinical workflow in a hybrid MR-US interventional suite**

S. M. Thompson, E. M. Knavel Koepsel, E. C. Bendel, C. P. Favazza, A. Lu,  
D. Woodrum, J. D. Collins  
Rochester, MN, USA  
Madison, WI, USA

**TECHNOLOGY****P-22****Hybrid deformable registration for motion compensation – a feasibility study with realtime 3D MRI-US**

J. Mitra, C. Bhushan, S. Ghose, D. Mills, A. Patel, M. Tarasek, T. Foo, S. Wells,  
S. Jupitz, B. Bednarz, C. Brace, J. H. Holmes, D. Yeo  
Madison, WI, USA  
Iowa City, IA, USA

**P-23****Convection triggers MRI amplitude and phase signal changes during proton beam irradiation of liquid water phantoms**

J. Peter, S. Gantz, L. Karsch, J. Pawelke, A. Hoffmann  
Dresden, Germany

**P-24****Improving accuracy of white marker contrast-based rapid 3D passive MR biopsy needle localization by utilizing a total variation-regularized image reconstruction**

J. F. Faust, D. Polak, M. E. Ladd, F. Maier  
Erlangen, Heidelberg, Germany

**P-25****Transfer function measurement setup for TRACRwire at 0.55 T**

O. Kocaturk, D. K. Yildirim, D. Uzun, N. Rafiee, R. J. Lederman  
Andover, MA, USA  
Bethesda, MD, USA

**P-26****MRI-visible pen for marking the entry point of an MRI-guided needle intervention**

A. Brockmann, J. Albrecht, F. Maier  
Erlangen, Aalen, Germany

**P-27****CNN-based segmentation of multiple needles for magnetic resonance-guided interventions**

A. Aleong, P. Chung, A. Berlin, R. A. Weersink  
Toronto, Canada

**P-28****Interactive real-time MRI-guided needle tracking using scanner remote control**

A. Aleong, J. Tokuda, P. Moreira, R. Seethamraju, G. Moran, H. Bhat,  
R. A. Weersink  
Toronto, Canada  
Boston, MA, USA  
Oakville, Ontario, Canada

**P-29****Acousto-optics based active MRI markers for real-time device tracking**

Y. S. Yaras, L. W. Bradley, D. K. Yildirim, J. Oshinski, R. Lederman, O. Kocaturk, F. L. Degertekin  
Atlanta, GA, USA  
Bethesda, MD, USA  
Istanbul, Turkey

**P-30****Effects of device trajectory variations on RF-induced heating at low field MRI systems**

A. C. Özen, M. Russe, T. Lottner, S. Reiss, I. Unal, S. Littin, M. Zaitsev, M. Bock  
Freiburg, Kiel, Germany

**P-31****Metamaterial inspired surface resonators as wireless coil**

R. Kowal, L. Knull, E. Pannicke, M. J. Hubmann, I. Fomin, D. Gareis, S. Scherbel,  
B. Hensen, G. Rose, F. Wacker, O. Speck  
Magdeburg, H $\ddot{o}$ chberg, Hannover, Germany

**P-32****Multi-channel receive coil for MRI-guided interventions**

R. Kowal, E. Pannicke, D. Gareis, S. Scherbel, L. Knull, I. Fomin, M. J. Hubmann, B. Hensen, G. Rose, F. Wacker, O. Speck  
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**P-33****Assessing MR compatible biopsy grids for interventional procedures**

E. Fischer, K. Cleary, K. Sharma, N. Mouzakis, M. Gebremeskel, P. Yarlomenko,  
R. Monfaredi  
Washington, DC, USA

**P-34****Sensorless and cost-efficient force feedback signal acquisition for bowden cable-driven manipulators and robotics during image-guided procedures**

M. Eisenmann, I. Fomin, R. Odenbach, B. Hensen, F. Wacker, G. Rose  
Magdeburg, Hannover, Germany



**P-35****Multifunctional, elastic and non-metallic Bowden-cable coupling mechanism for the modularization and remote control of the  $\mu$ RIGS instrument micropositioning system**

N. Thoma, R. Odenbach, I. Fomin, B. Hensen, F. Wacker, G. Rose  
Magdeburg, Hannover, Germany

**P-36****Local MRI wireless RF coils to boost calibration reference signal prior to MRI guided interventional treatments**

J. Felmler, A. Lu, C. Favazza, L. Mynderse, D. Woodrum  
Rochester, MN, USA

**P-37****Radiofrequency safety of external defibrillation electrodes at 1.5 T**

W. M. Brink, R. Oosterveld, R. M. Verdaasdonk  
Enschede, The Netherlands

**P-38****Disposable and intuitive needle-based interventions**

J. S. S. López, J. Alpers, S. Balakrishnan, F. Wacker, B. Hensen, M. Pech, M. Becker  
Magdeburg, Hannover, Germany

**P-39****Coaxial needles: Optimizing visibility and operator confidence for MRI/US-guided intervention**

A. Faacks, J. Holmes, J. Mitra, C. Bhushan, D. Mills, M. Tarasek, D. Yeo, C. Brace, S. Wells  
Madison, WI, USA  
Iowa City, IA, USA  
Niskayuna, NY, USA

**P-40****Simultaneous T2-weighted MRI of two orthogonal slices for real-time lesion tracking**

S. Hickey, A. Reichert, W. Ptacek, T. Bortfeld, M. Bock  
Freiburg, Germany  
Vienna, Austria  
Boston, MA, USA

**P-41****InGrid – Finding incision points the easy way**

S. Balakrishnan, J. Alpers, J. S. Sánchez López, M. Becker, M. Pech, F. Wacker, B. Hensen  
Magdeburg, Hannover, Germany

**P-42****Modularizable, MRI-compatible and elastic abdominal phantom to perform dynamic interventional experiments under simulated respiratory cycles**

K. Engel, I. Fomin, T. Gerlach, B. Hensen, M. Gutberlet, F. Wacker, G. Rose  
Magdeburg, Hannover, Germany

## ABLATION

### P-43

#### **A new multi-source MR-LITT device for creating conformal ablations**

M. Desclides, G. Machinet, C. Pierre, V. Ozenne, S. Chemouny, B. Quesson  
Bordeaux, Pessac, France

### P-44

#### **Investigation of microwave ablation using dual applicators with real-time MR thermometry**

A. Lu, L. Ren, K. R. Gorny, J. P. Felmlee, C. P. Favazza, D. A. Adamo,  
S. M. Thompson, D. A. Woodrum  
Rochester, MN, USA

### P-45

#### **Feasibility of quantitative MR-based hypoxia measurements during MR-guided gynecological brachytherapy**

J. Tokuda, G. J. Ekchian, R. A. Cormack, M. Dyer, E. Kaza, M. J. Cima  
Boston, Cambridge, MA, USA

### P-46

#### **Investigation of thermal injury risks from high-pressure gas supply line (HPGSL) during MR guided cryoablation**

A. Lu, L. Ren, C. P. Favazza, J. P. Felmlee, D. A. Adamo, S. M. Thompson,  
L. A. Mynderse, D. A. Woodrum  
Rochester, MN, USA

### P-47

#### **Free-breathing T1-weighted 3D sequence in MR-guided liver interventions: Evaluation of workflow and diagnostic quality**

J. Glandorf, D. Horstmann, M. Gutberlet, D. M. Düx, F. Wacker, B. Hensen  
Hannover, Germany

### P-48

#### **Reduction of electromagnetic interferences of a commercially available MR approved microwave generator**

C. Löning, J. Joaquin, K. Meyer zu Hartlage, T. Gerlach, O. Speck, F. Wacker,  
B. Hensen, M. Gutberlet  
Hannover, Magdeburg, Germany

### P-49

#### **Technical evaluation of motor evoked potential monitoring during MR-guided cryoablation of the shoulder**

C. P. Favazza, S. M. Thompson, E. M. Hoffman, J. P. Felmlee, B. T. Welch,  
D. A. Adamo, D. A. Woodrum, A. Lu  
Rochester, MN, USA

### P-50

#### **MR guided cryoablation of renal masses**

D. A. Adamo, S. M. Thompson, A. Lu, C. P. Favazza, E. Knavel Koepsel,  
L. A. Mynderse, D. A. Woodrum  
Rochester, MN, USA | Madison, WI, USA

**P-51****Shaft heating risk mitigation during MRI-guided microwave ablation using non-actively cooled applicators**

A. Lu, L. Ren, J. P. Felmlee, C. P. Favazza, D. A. Adamo, S. M. Thompson, D. A. Woodrum  
Rochester, MN, USA

**P-52****Evaluation of cryoablation probe artifacts at 0.55 T**

F. Maier, J. J. Fütterer  
Erlangen, Germany  
Nijmegen, The Netherlands

**P-53****Investigation of cryoneedle induced RF heating risk during MRI-guided cryoablation at 1.5 T**

A. Lu, C. P. Favazza, J. P. Felmlee, S. M. Thompson, L. A. Mynderse, D. A. Woodrum, K. R. Gorny  
Rochester, MN, USA

**P-54****Intraoperative neurophysiological monitoring with motor evoked potentials during MRI-guided cryoablation: Initial feasibility, safety and clinical experience**

S. M. Thompson, E. M. Hoffman, G. M. Powell, T. Oishi, L. R. Schmidt, T. P. Velez, D. A. Adamo, C. P. Favazza, A. Lu, J. Felmlee, D. Woodrum  
Rochester, MN, USA

**P-55****MRI-guided high-dose-rate interstitial brachytherapy of small hepatic malignancies ( $d \leq 12$  mm) – use of the gadoxetic-acid plateau phase**

S. Ebel, H. J. Meyer, G. Prasse, D. Seehofer, T. Berg, K. Hering, T. Kuhnt, H. Busse, A. Hofmann, H. Gößmann, T. Denecke  
Leipzig, Germany

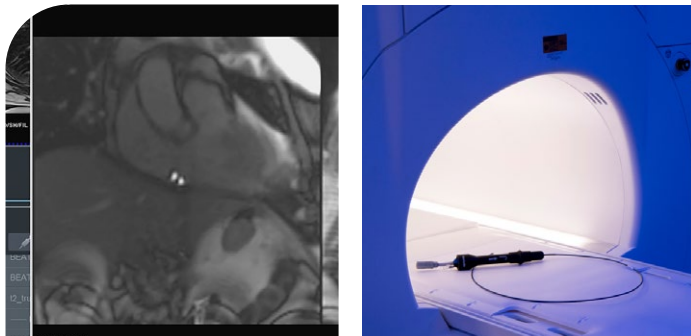
**P-56****MR-based volumetric assessment of thyroid nodule radiofrequency ablation in anthropomorphic phantoms**

T. Boers, G. Wennemars, S. J. Braak, M. Versluis, S. Manohar, W.M. Brink  
Enschede, Hengelo, The Netherlands



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# GENERAL INFORMATION



## CONFERENCE DATE

October 14- 15, 2022

### Venue

The Westin Leipzig

Gerberstr. 15, 04105 Leipzig, Germany

Phone / Fax: +49 (341) 988-0 / -1229

## INFORMATION FOR AUTHORS

### Main Lectures

Lectures on selected scientific topics will be given by invited speakers.

### Oral Presentations

Proffered papers will be formally presented in topical oral sessions. Your total time will be restricted to 10 minutes with 8 minutes for speaking and 2 more minutes for a short discussion. We kindly ask all speakers to strictly respect this time limit. Please prepare your presentation in PPT(X) format, copy it to either a USB medium or CD-ROM and hand it in to one of our technical staff members in the speaker ready room at least one hour before the start of your session.

### Poster Presentations

Posters will be exhibited throughout the meeting. A dedicated poster discussion session will be organized on Friday, October 14, 01:45 – 03:00 pm, and poster authors are expected to be present throughout that time to engage in discussion with attendees.

### Video Presentations

Cases may illustrate a particular setup, indication, procedure, workflow or result. Your total time will be restricted to 8 minutes for speaking and 2 more minutes for a short discussion. Please prepare your digital presentation in a standard movie file format (AVI, MOV, MPG, MP4) and check proper play-back with one of our technical staff members in the speaker ready room at least one hour before the start of the session.

### Poster Award

Three poster prizes will be awarded to appreciate the high level of the scientific exhibits.

### Conference Language

All lectures and presentations will be in English.

## CONFERENCE FEES

Conference fee includes lunch and coffee breaks on Oct 14-15.  
All fees are in EURO (€).

Reduced fees by September 15, 2022 (On-site fees after that date in parentheses)

- Physicians and Scientists € 300,- (350,-)
- Residents\*, Fellows\*, Medical Technologists\* € 250,- (300,-)
- Students\* € 150,- (200,-)
- Social Event – Gondwanaland Zoo Leipzig € 60,-

\*proper validation document required

One-day tickets for either October 14 or 15 are available for 50% of the fees listed above and include lunch and coffee breaks on the respective date.

**All symposium registrations and hotel reservation must be send to [akd congress & events](#).**

**Please understand that registration can only be completed when full payment has been received.**

**You can also register online:  
Follow the link on the iMRI website  
[www.imri2020.org](http://www.imri2020.org)**

## SOCIAL EVENT

**Gondwanaland at Zoo Leipzig**  
**Friday, October 14, 2022, 07:15 pm**

Gondwanaland at Zoo Leipzig will appeal to all of your senses as you experience the tropical rainforests of Africa, Asia and South America. Gondwanaland is home to about 300 exotic animals and 17,000 tropical plants.

Enjoy a welcome cocktail before entering the impressive tropical complex. You will then have time to follow the jungle paths or treetop trail and drift along in a boat on the jungle river Gamanile before having dinner and drinks at Restaurant Patakan.

This event can be booked for a fee of 60 Euro for registered iMRI participants and accompanying persons.

The entrance to this event is located at Pfaffendorfer Str. 29, 04105 Leipzig, about 150 m to the right from the main entrance of the zoo, and a 5-minute walk from the conference venue (Westin Hotel Leipzig).

## CONGRESS OFFICE

Thursday, October 13, 2022 5.00 pm - 8.30 pm  
 Friday, October 14, 2022 7.30 am - 6.00 pm  
 Saturday, October 15, 2022 8.00 am - 6.00 pm

## INDUSTRIAL EXHIBITION

Friday, October 14, and Saturday, October 15, 2022 in the foyer of the Conference Center. For more information please contact akd congress & events.

## CONGRESS AGENCY

### akd congress & events

Waldstr. 57  
 04105 Leipzig  
 Germany  
 Phone / Fax: +49 (341) 268276-35 / -36  
 Email: info@akd-congress.de

## HOTEL RESERVATION

Hotel Reservation will be handled by **akd congress & events**. Requests for accommodation should be made on the enclosed official registration form or via online registration.

Hotel	Single Room	Double Room
The Westin Leipzig (Congress Center)	€ 145,-	€ 165,-
InterCityHotel Leipzig (2-minute walking distance)	€ 99,-	€ 119,-
H2 Hotel Leipzig City (8-minute walking distance)	€ 79,-	€ 89,-
Seaside Park Hotel (5-minute walking distance)	€ 99,-	€ 119,-

Above rates are per room and night (in €) and include breakfast, service charge and VAT.

Payments will be made directly at the hotel.

## PAYMENT

You will receive a confirmation/invoice once you have registered for the symposium.

Payment is possible via bank transfer or credit card (Visa, Eurocard, Mastercard, American Express).

All payments must be in EURO.

## CANCELLATIONS

Cancellation is possible in writing or by fax only.

### Symposium

Until September 15, 2022, the cancellation fee will be € 100,-  
No refunds will be made after September 15, 2022.

### Hotel

After September 15, 2022, the hotel may charge you the applicable no-show fee for each night cancelled.



### Distances

**Airport (Leipzig/Halle) – Congress Center (The Westin):** 20 min by taxi

**Airport – Main train station:** 13 min by rail (S-Bahn, every 30 min)

**Main train station – Congress Center:** 6 min by foot

**InterCityHotel – Congress Center:** 2 min by foot

**H2 Hotel Leipzig City – Congress Center:** 8 min by foot

**Seaside Park Hotel Leipzig – Congress Center:** 5 min by foot



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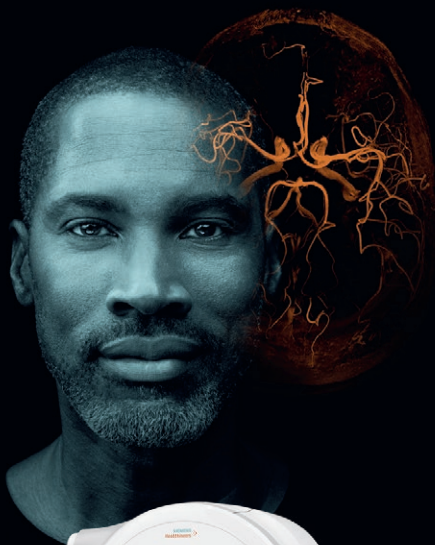


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# NOTES

# Towards improved clinical outcomes by advancing interventional MRI



## MR in Therapy

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