

Contents

Session 1: Methodology 1

Keynote: Magnetic Nanoparticle Dynamics in Spectroscopy and its Applications	
DR. JOHN B. WEAVER	3
Spatial Resolution in MPI: The Role of Harmonic Number	
H. BAGHERI AND M.E. HAYDEN	5
Sparse source reconstruction for nanomagnetic relaxometry	
SARA LOUPOT, WOLFGANG STEFAN, REZA MEDANKAN, KELSEY MATHIEU, DAVID FUENTES, AND JOHN D. HAZLE	6
Symmetries in Nanoparticle Dynamics Found From The Buckingham Pi Theorem Improve Sensing Strategies	
YIPENG SHI, JOHN B. WEAVER	7
Functional Magnetic Particle Imaging in measurement and simulation	
THILO VIERECK, CHRISTIAN KUHLMANN, SEBASTIAN DRAACK, FRANK LUDWIG, MEINHARD SCHILLING	8
Experimental Distinction of Different Viscosities using Multispectral Magnetic Particle Imaging	
MARTIN HOFMANN, JAN DIECKHOFF, HARALD ITTRICH, TOBIAS KNOPP	9
Calibration-Free Color MPI	
YAVUZ MUSLU, MUSTAFA ÜTKÜR, OMER BURAK DEMIREL, EMINE ULKU SARITAS	10

Elevator speeches 1: Instrumentation

An Ultra-Low Noise Preamplifier Design for Magnetic Particle Imaging	
BELIZ GUNEL, BO ZHENG, STEVEN CONOLLY	13
Suppress Direct Feedthrough Induced by Excitation Magnetic Field	
TAO JIANG, SHIQIANG PI, AND WENZHONG LIU	14
Switching Power Amplifier for Magnetic Particle Imaging	
TIMO F. SATTEL, CHRISTIAN VOLLERTSEN, JAN GRESSMANN, OLIVER WOYWODE	15
A novel compensation technique for gradiometer receive coils in MPI/MPS	
FLORIAN FIDLER, KARL-HEINZ HILLER, PETER M. JAKOB	16
A Tunable Gradiometer Receive Coil for Magnetic Particle Imaging	
STEFFEN BRUNS, MATTHIAS WEBER, THORSTEN M. BUZUG	17
MPS and ACS with an atomic magnetometer	
SIMONE COLOMBO, VICTOR LEBEDEV, ZORAN D. GRUJIĆ, VLADIMIR DOLGOVSKIY, ANTOINE WEIS.	18
Development of a K-Rb Hybrid Atomic Magnetometer toward MPI	
YOSUKE ITO, TETSUO KOBAYASHI	19
MPS test measurments with phase angle detection	
PRZEMYSŁAW WRÓBLEWSKI, WALDEMAR SMOLIK	20
An Arbitrary Excitation Waveform Relaxometer	
ZHI WEI TAY, DANIEL W. HENSLEY, LAURA A. TAYLOR, BELIZ GUNEL, PATRICK W. GOODWILL, BO ZHENG, STEVEN M. CONOLLY	21
Effects of Viscosity on Nanoparticle Relaxation Time Constant	
MUSTAFA ÜTKÜR, YAVUZ MUSLU, AHMET ALACAAGLU, ALI ALPER OZASLAN, EMINE ULKU SARITAS	22
Reconstruction of a 2D Phantom Recorded with a Single-Sided MPI Device	
KSENIJA GRÄFE, ANSELM VON GLADISS, MANDY AHLBORG, GAEL BRINGOUT, THORSTEN M. BUZUG	23
Single-sided FFL-based MPI Device with Depth Encoding	
ALEXEY TONYUSHKIN	24

High Resolution Tomographic MPI with a Field Free Line Electromagnet	
ELAINE YU, PATRICK W. GOODWILL, ZHI WEI TAY, PAUL KESELMAN, XINYI ZHOU, RYAN ORENDORFF, DANIEL W. HENSLEY, MATT FERGUSON, BO ZHENG, STEVEN M. CONOLLY	25
MPI Cube – fully 3D field free line scanner	
P. VOGEL, M.A. RÜCKERT, V.C. BEHR	26
Self-Shielded, High-Resolution, and High-Sensitivity MPI FFL Imager	
PATRICK GOODWILL, JUSTIN KONKLE, STEVEN SUDDARTH, ANNA CHRISTENSEN	27
Modular mobility MPI system	
SEBASTIAN DRAACK, CHRISTIAN KUHLMANN, THILO VIERECK, FRANK LUDWIG, MEINHARD SCHILLING	28
Bimodal TWMPI-MRI hybrid scanner – first MRI results	
PETER KLAUER, EBERHARD ROMMEL, PATRICK VOGEL, MARTIN A. RÜCKERT, VOLKER C. BEHR	29
Studies on the Optimization of Efficient Selection and Focus Field Coil Configurations	
JULIA MRONGOWIUS, CHRISTIAN KAETHNER, THORSTEN M. BUZUG	30
Magnetic Particle Imaging by Using Multichannel Coil Arrays	
SHU-HSIEN LIAO, JEN-JIE CHIEH, HERNG-ER HORNG, HONG-CHANG YANG, SABURO TANAKA	31
Designing coils to minimize the maximal induced electrical field amplitude in a patient	
GÄEL BRINGOUT, JOHAN LÖFBERG, PATRICIA ULLOA, MARTIN A. KOCH, THORSTEN M. BUZUG	32
Novel Selection Coils Design for 3D FFL-based MPI	
ALEXEY TONYUSHKIN	33
Evaluation of the spatial confidence and dual modal FOV-center conformity of a highly integrated MPI-MRI hybrid system	
JOCHEN FRANKE, ULRICH HEINEN, ALEXANDER WEBER, HEINRICH LEHR, MICHAEL HEIDENREICH, WOLFGANG RUHM, VOLKMAR SCHULZ	34
Metallic artefact suppression in intraoperative magnetometers	
SEBASTIAAN WAANDERS, ROGIER WILDEBOER, ERIK KROOSHOP, BENNIE TEN HAKEN	35
Systematic Background Estimation	
MARCEL STRAUB, BERNHARD GLEICH, JÜRGEN RAHMER, VOLKMAR SCHULZ	36
Controlling the Position of the Field-Free-Point in Magnetic Particle Imaging	
A. WEBER, J. WEIZENECKER, R. PIETIG, U. HEINEN, T.M. BUZUG	37
Force analysis device for magnetic manipulation	
DAVID WELLER, THORSTEN M. BUZUG AND THOMAS FRIEDRICH	38
Study of temperature measurement on pn-junction of light-emitting diodes using magnetic nanothermometer	
ZHONGZHOU DU, KAI WEI, RIJIAN SU, YONG GAN, AND WENZHONG LIU	39
Elevator speeches 1: Applications	
In vitro MPI iron quantification of labeled cells for a metastasis-tracking study	
VERA PAEFGEN, MARCEL STRAUB, FABIAN KIEßLING, VOLKMAR SCHULZ	43
MPI-Detection of Multicore Iron Oxide Nanoparticles dedicated for Magnetic Drug Targeting	
STEFAN LYER, TOBIAS KNOPP, FRANZISKA WERNER, LUTZ TRAHMS, FRANK WIEKHORST, TOBIAS STRUFFERT, TOBIAS ENGELHORN, ARNDT DÖRFLER, TOBIAS BÄUERLE, MICHAEL UDER, CHRISTOPH ALEXIOU	44
Different Behavior of MPI Signals from Magnetic Nanoparticles Internalized by Macrophages and Colon Cancer Cells	
HISAAKI SUZUKA, ATSUSHI MIMURA, YOSHIMI INAOKA, KOHEI NISHIMOTO, NATSUGO BANURA, KENYA MURASE	45

Processing of SPIO in macrophages and tumor tissue for MPI lymph node imaging in breast cancer DOMINIQUE FINAS, JANINE STEGMANN-FREHSE J, BENJAMIN SAUER, GEREON HÜTTMANN, ACIM RODY, THORSTEN BUZUG, KERSTIN LÜDTKE-BUZUG	46
Magnetic Particle Spectrometer for the Analysis of Magnetic Particle Heating Applications ANDRÉ BEHREND, THORSTEN M. BUZUG, ALEXANDER NEUMANN	47
Visualization and Quantification of the Intratumoral Distribution and Time-Dependent Change of Magnetic Nanoparticles in Magnetic Hyperthermia Using Magnetic Particle Imaging TOMOMI KUBOYABU, ISAMU YABATA, MARINA AOKI, AKIKO OHKI, MIKIKO YAMAWAKI, YOSHIMI INAOKA, KAZUKI SHIMADA, KENYA MURASE	48
Towards Simultaneous MFH and Temperature Monitoring with MPI CAGLA DENIZ BAHADIR, MUSTAFA ÜTKÜR, EMINE ULKU SARITAS	49
First Results: Phantoms for MPI and Ultrasound Therapy ANKIT MALHOTRA, CORINNA STEGELMEIER, THOMAS FRIEDRICH, KERSTIN LÜDTKE- BUZUG AND THORSTEN M. BUZUG	50
Magnetic particle imaging in a mouse model of acute ischemic stroke PETER LUDEWIG, NADINE GDANIECJAN SEDLACIK, SARAH BEHR, SCOTT J. KEMP, R. MATTHEW FERGUSON, AMIT P. KHANDHAR, KANNAN M. KRISHNAN, JENS FIEHLER, CHRISTIAN GERLOFF, TOBIAS KNOPP, TIM MAGNUS	51
First <i>in-vivo</i> Perfusion Imaging with MPI RYAN ORENDORFF, PAUL KESELMAN, STEVEN M. CONOLLY	52
Long term <i>in vivo</i> biodistribution and clearance of tailored MPI tracers PAUL KESELMAN, BO ZHENG, PATRICK W. GOODWILL, AND STEVEN M. CONOLLY	53
Stem cell tracking potential of Magnetic Particle Imaging compared with 19F Magnetic Resonance Imaging FRISO G. HESLINGA, STEFFEN BRUNS, ELAINE YU, PAUL KESELMAN, XINYI Y. ZHOU, BO ZHENG, SEBASTIAAN WAANDERS, PATRICK W. GOODWILL, M. WENDLAND, BENNIE TEN HAKEN, STEVEN M. CONOLLY	54
Growth inhibition of <i>Pseudomonas Aeruginosa</i> by extremely low frequency Pulsed Magnetic Field (PMF) FADEL M.ALI, NERMEEN.SERAG, A. M. KHALIL	55
Compression of FFP System Matrix with a Special Sampling Rate on the Lissajous Trajectory MARCO MAASS, KLAAS BENTE, MANDY AHLBORG, HANNE MEDIMAGH, HUY PHAN, THORSTEN M. BUZUG, AND ALFRED MERTINS	56
Investigation and Removal of Artifacts Due to Particles Located Outside the Field-Free-Point Trajectory A. WEBER, F. WERNER, J. WEIZENECKER, T.M. BUZUG, T. KNOPP	57
MMSE MPI Reconstruction Using Background Identification HANNA SIEBERT, MARCO MAASS, MANDY AHLBORG, THORSTEN M. BUZUG, AND ALFRED MERTINS	58
Optimizing the Coil Setup for a Three-Dimensional Magnetic Particle Spectrometer XIN CHEN, ANDRÉ BEHREND, MATTHIAS GRAESER, ALEXANDER NEUMANN, THORSTEN M. BUZUG	59
Development and Testing of Magnetic Nanoparticle-Gel Materials for Magnetic Particle Imaging Phantoms R. SANDIG, A. MATTERN, D. BAUMGARTEN, O. KOSCH, F. WIEKHORST, A. WEIDNER, S. DUTZ	60
Dynamic Magnetization of Immobilized Magnetic Nanoparticles for Cases with Aligned and Randomly Oriented Easy Axes TAKASHI YOSHIDA, THILO VIERECK, TERUYOSHI SASAYAMA, KEIJI ENPUKU, MEINHARD SCHILLING, AND FRANK LUDWIG	61

Elevator speeches 2: Methodology

A Novel Magnetic Particle Imaging Scanner with Lower Amplitude of an Excitation Field	
XINGMING ZHANG, TUẤN ANH LÊ, AND JUNGWON YOON	63
RDS Toolbox – Simulation of 3D Rotational Drift	
A. VILTER, M. A. RÜCKERT, T. KAMPF, V. J. F. STURM, V. C. BEHR	64
Magnetic signal detection method based on active vibration of magnetic nanoparticles	
AKIHIRO MATSUHISA, TOMOKI HATSUDA, TOMOYUKI TAKAGI, MASAHIRO ARAYAMA, YASUTOSHI ISHIHARA	65
The Influence of Discretization of DC Field on Magnetic Nanothermometer	
LE HE, SHIQIANG PI, QINGGUO XIE, WENZHONG LIU	66
The effect of dc field strength on the performance of a magnetic nanothermometer	
JING ZHONG, FRANK LUDWIG, MEINHARD SCHILLING	67
Magnetic signal separation using independent component analysis	
MASAHIRO ARAYAMA, TOMOYUKI TAKAGI, TOMOKI HATSUDA, AKIHIRO MATSUHISA, HIROKI TSUCHIYA, YASUTOSHI ISHIHARA	68
MPI meets MRI – simultaneous measurement of MPI and MRI signals	
P. VOGEL, T. KAMPF, M.A. RÜCKERT, A. VILTER, P.M. JAKOB, V.C. BEHR	69
Effects of Safety Limits on Image Quality in MPI	
ECEM BOZKURT, OMER BURAK DEMIREL, DAMLA SARICA, YAVUZ MUSLU, EMINE ULKU SARITAS	70
Lissajous Node Points for a Sytem Matrix based MPI Image Reconstruction Approach	
CHRISTIAN KAETHNER, MANDY AHLBORG, WOLFGANG ERB, THORSTEN M. BUZUG	71
Basic Study of Image Reconstruction Method Using Neural Networks with Additional Learning for Magnetic Particle Imaging	
TOMOKI HATSUDA, TOMOYUKI TAKAGI, AKIHIRO MATSUHISA, MASAHIRO ARAYAMA, HIROKI TSUCHIYA, YASUTOSHI ISHIHARA	72
A new 3D MPI model using realistic magnetic field topologies for algebraic reconstruction	
WOLFGANG ERB, GAEL BRINGOUT, JÜRGEN FRIKEL, THORSTEN M. BUZUG	73
Nonlinear Scanning in X-Space MPI	
AHMET ALACAAGLU, ALI ALPER OZASLAN, OMER BURAK DEMIREL, EMINE ULKU SARITAS	74
X-Space and Chebyshev Reconstruction in Magnetic Particle Imaging: A First Experimental Comparison	
TOBIAS KNOPP, CHRISITAN KAETHNER, MANDY AHLBORG AND THORSTEN M. BUZUG	75
Self Calibration for Relaxation- and System-Induced Delays in X-space MPI	
BATURALP BUYUKATES, DAMLA SARICA, EMINE ULKU SARITAS	76
Spatial Resolution in MPI: Modeling the Role of Harmonic Number	
H. BAGHERI AND M.E. HAYDEN	77
Rapid Scanning in X-Space MPI: Impacts on Image Quality	
OMER BURAK DEMIREL, DAMLA SARICA, EMINE ULKU SARITAS	78
Influence of Particle Size Distribution of Magnetic Nanoparticles on the Spatial Resolution of Magnetic Particle Imaging	
XIUYING WANG, SHIQIANG PI, AND WENZHONG LIU	79
DC Shift Imaging for X-Space MPI Reconstruction	
DAMLA SARICA, OMER BURAK DEMIREL, YAVUZ MUSLU, EMINE ULKU SARITAS	80
Limitations of Magnetic Particle Imaging Resolving Large Contrasts	
NADINE GDANIEC, MARTIN HOFMANN, TOBIAS KNOPP	81
Deconvolving Relaxation Effects in Multi-Dimensional X-space MPI	
GAMZE ONUKER, OMER BURAK DEMIREL, DAMLA SARICA, YAVUZ MUSLU, EMINE ULKU SARITAS	82

Enhancing the sensitivity in Magnetic Particle Imaging by Background Subtraction	
K. THEM, M. G. KAUL, C. JUNG, M. HOFMANN, T. MUMMERT, F. WERNER, T. KNOPP	83
Correction of Blurring due to a Difference in Scanning Direction of Field-Free Line in Projection-Based Magnetic Particle Imaging	
KENYA MURASE, KAZUKI SHIMADA, NATSUO BANURA	84
Sensitivity enhancement for stem cell monitoring in Magnetic Particle Imaging	
KOLJA THEM, J. SALAMON, M. G. KAUL, CLAUDIA LANGE, H. ITTRICH, TOBIAS KNOPP	85
Towards the Characterization of Distortion Artifacts in Elongated Trajectory MPI	
ANNIKA HÄNSCH, CHRISTIAN KAETHNER, AILEEN CORDES, THORSTEN M. BUZUG	86
Fiducial-Based Geometry Planning and Image Registration for Magnetic Particle Imaging	
F. WERNER, C. JUNG, M. HOFMANN, R. WERNER, J. SALAMON, D. SÄRING, M. G. KAUL, K. THEM, O. M. WEBER, T. MUMMERT, G. ADAM, H. ITTRICH, T. KNOPP	87
Predicting 2D MPI imaging performance using a conventionally acquired or a hybrid 2D system function	
HANNE MEDIMAGH, THORSTEN M. BUZUG	88
Experimental Results on 3D Real-Time Magnetic Particle Imaging of Large Fields-of-View	
JÜRGEN RAHMER, BERNHARD GLEICH, CLAAS BONTUS, INGO SCHMALE, JOACHIM SCHMIDT, OLIVER WOYWODE, AND JÖRN BORGERT	89
Rotational Drift Spectroscopy (RDS): Measuring Fast Relaxing Magnetic Nanoparticle Ensembles	
M.A. RÜCKERT, A. VILTER, P. VOGEL, V.C. BEHR	90
Dependence of Brownian and Néel Time Constants on Magnetic Field	
FRANK LUDWIG, JAN DIECKHOFF, DIETMAR EBERBECK	91
Harmonic phases of the nanoparticle magnetization and their variation with temperature.	
ENEKO GARAIO, JUAN-MARI COLLANTES, JOSE ANGEL GARCIA, FERNANDO PLAZAOLA, IRATI RODRIGO AND OLIVIER SANDRE	92
Heat Transfer Simulation for Optimization and Treatment Planning of Magnetic Hyperthermia Using Magnetic Particle Imaging	
NATSUO BANURA, ATSUSHI MIMURA, KOHEI NISHIMOTO, KENYA MURASE	93
Magnetic Nanoparticle Temperature Estimation Using Dual-Frequency Magnetic Filed	
KAI WEI, SHIQIANG PI, WENZHONG LIU	94
3D-GUI Simulation Environment for MPI	
P. VOGEL, M.A. RÜCKERT, V.C. BEHR	95
Elevator speeches 2: Tracer Materials	
Biocompatible Magnetite Nanoparticles as Tracer Material for Magnetic Particle Imaging	
CORINNA STEGELMEIER, ANKIT MALHOTRA, KERSTIN LÜDTKE-BUZUG	99
Continuous Synthesis of Single-Core Iron Oxide Nanoparticles for Biomedical Applications	
ABDULKADER BAKI, REGINA BLEUL, CHRISTOPH BANTZ, RAPHAEL THIERMANN, MICHAEL MASKOS	100
Diffusion-Controlled Synthesis of Magnetic Nanoparticles	
DAVID HEINKE, NICOLE GEHRKE, DANIEL SCHMIDT, UWE STEINHOFF, THILO VIERECK, HILKE REMMER, FRANK LUDWIG, ANDREAS BRIEL	101
Development and Physicochemical Characterization of Continuously Manufactured Single-Core Iron Oxide Nanoparticles	
CHRISTOPH BANTZ, REGINA BLEUL, ABDULKADER BAKI, RAPHAEL THIERMANN, NORBERT LÖWA, DIETMAR EBERBECK, LUTZ TRAHMS, MICHAEL MASKOS	102
Formation of a Protein Corona on Magnetic Nanoparticles Affects Nanoparticle-Cell Interactions	
A. WEIDNER, C. GRÄFE, M. V.D. LÜHE, C. BERGEMANN, J.H. CLEMENT, F.H. SCHACHER, S. DUTZ	103

Development of Magnetic Nanocarriers Based on Thermosensitive Liposomes and Their Visualization Using Magnetic Particle Imaging	104
SHUKI MARUYAMA, KOHEI ENMEIJI, KAZUKI SHIMADA, KENYA MURASE	
Quantitative biodistribution studies of optimized MPI tracers radiolabeled for multimodal SPECT/CT imaging	105
HAMED ARAMI, KATHAYOUN SAATCHI, ERIC TEEMAN, ALYSSA TROKSA, HAYDIN BRADSHAW, URS O. HÄFELI, AND KANNAN M. KRISHNAN	
Magnetic Separation to Extract Suitable Cells for MPI Cell Tracking	106
ANGELA ARIZA DE SCHELLENBERGER, NORBERT LÖWA, JÖRG SCHNORR, HARALD KRATZ, MATTHIAS TAUPITZ, FRANK WIEKHORST	
Evaluation of harmonic signal from blood-pooling magnetic nanoparticles for magnetic particle imaging	107
SATOSHI OTA, RYUJI TAKEDA, TSUTOMU YAMADA, YASUSHI TAKEMURA	
Does a highly concentrated sample generate a better system function?	108
OLAF KOSCH, NORBERT LÖWA, FRANK WIEKHORST, LUTZ TRAHMS	
<i>In vivo</i> measurement und comparison of two Magnetic Particle Imaging tracer: LS-008 and Resovist	109
MICHAEL G. KAUL, CAROLINE JUNG, JOHANNES SALAMON, TOBIAS MUMMERT, MARTIN HOFMANN, SCOTT J. KEMP, R. MATTHEW FERGUSON, AMIT P. KHANDHAR, KANNAN M. KRISHNAN, HARALD ITTRICH, GERHARD ADAM, TOBIAS KNOPP	
Correlation of MPS with Colorimetric Iron Content Measurements	110
LISA WENDT, KERSTIN LÜDTKE-BUZUG	
Magnetic Particle Spectrometry of LS-008 driven at 153 kHz, 15 mT/ μ_0	111
R. MATTHEW FERGUSON, AMIT P. KHANDHAR, SCOTT J. KEMP, AND KANNAN M KRISHNAN	
MPS study on new MPI tracer material	112
CHRISTINA DEBBELER, CATHRINE FRANDSEN, NICOLE GEHRKE, CORDULA GRÜTTNER, DAVID HEINKE, CHRISTER JOHANSSON, ANJA JOHL, MARÍA DEL PUERTO MORALES, MIRIAM VARÓN, KERSTIN LÜDTKE-BUZUG	
Imaging Characterization of MPI Tracers Employing Offset Measurements in a two Dimensional Magnetic Particle Spectrometer	113
DANIEL SCHMIDT, MATTHIAS GRAESER, ANSELM VON GLADISS, THORSTEN M. BUZUG, UWE STEINHOFF	
The Particle Response of Blended Nanoparticles in MPI	114
ANSELM VON GLADISS, MATTHIAS GRAESER, R. MATTHEW FERGUSON, AMIT P. KHANDHAR, SCOTT J. KEMP, KANNAN M. KRISHNAN, THORSTEN M. BUZUG	
Determining magnetic impurities and nonspecific magnetic nanoparticle adhesion of MPI phantom materials	115
PATRICIA RADON, NORBERT LÖWA, FELIX PTACH, DIRK GUTKELCH, FRANK WIEKHORST	
Session 2: Application 1	
Keynote: Potential Clinical Applications of MPI	119
DR. MED. HARALD ITTRICH AND DR. MED. JOHANNES SALAMON	
Color MPI for Cardiovascular Interventions	121
JULIAN HAEGELE, SARAH VAALMA, NIKOLAOS PANAGIOTOPOULOS, JÖRG BARKHAUSEN, FLORIAN M. VOGT, JÖRN BORGERT, JÜRGEN RAHMER	
The next step towards interventional MPI: Real Time 3D MPI-guided treatment of a vessel stenosis using a blood pool agent and MRI Road Map approach	122
JOHANNES SALAMON; MARTIN HOFMANN; CAROLINE JUNG; MICHAEL GERHARD KAUL, RUDOLPH REIMER; ANNIKA VOM SCHEIDT; GERHARD ADAM; TOBIAS KNOPP; HARALD ITTRICH	
Quantification of Vascular Stenosis Phantoms using Traveling Wave MPI	123
S. HERZ, P. VOGEL, V.C. BEHR, T.A. BLEY	

Session 3: Methodology 2

Resolution Improvement for X-Space MPI having Low Gradient Field	127
HAMED JABBARI ASL, JUNGWON YOON	
X-space Deconvolution for Multidimensional Lissajous-based Data-Acquisition Schemes	128
AILEEN CORDES, CHRISTIAN KAETHNER, MANDY AHLBORG, THORSTEN M. BUZUG	
Flexible reconstruction method for Traveling Wave MPI	129
T. KAMPF, P. VOGEL, M.A. RÜCKERT, V.C. BEHR	
Reconstruction of Experimental 2D MPI Data using a Hybrid System Matrix	130
MATTHIAS GRAESER, ANSELM VON GLADISS, PATRYK SZWARGULSKI, MANDY AHLBORG, TOBIAS KNOPP, THORSTEN M. BUZUG	
Artefact Suppression in Time-resolved Magnetic Particle Imaging	131
ALEXANDER WEBER, JOCHEN FRANKE, HEINRICH LEHR, WOLFGANG RUHM, MICHAEL HEIDENREICH, THORSTEN M. BUZUG ULRICH HEINEN	
Fused Lasso Regularization for Magnetic Particle Imaging	132
MARTIN STORATH, CHRISTINA BRANDT, MARTIN HOFMANN, TOBIAS KNOPP, ALEXANDER WEBER, ANDREAS WEINMANN	

Session 4: Instrumentation 1

Keynote: Safety Limits in MPI and Implications for Image Quality	135
DR. EMINE ULKU SARITAS	
Signal path for a 10 kHz and 25 kHz mobility MPI System	137
CHRISTIAN KUHLMANN, SEBASTIAN DRAACK, THILO VIERECK, FRANK LUDWIG, MEINHARD SCHILLING	
First Spectrum Measurements with a Rabbit-Sized FFL-Scanner	138
JAN STELZNER, GAELE BRINGOUT, ANSELM VON GLADISS, HANNE MEDIMAGH, MANDY AHLBORG, TIMO F. SATTEL, THORSTEN M. BUZUG	
Micro Traveling Wave MPI – initial results with optimized tracer LS-008	139
P. VOGEL, M.A. RÜCKERT, S.J. KEMP, A.P. KHANDHAR, R.M. FERGUSON, A. VILTER, P. KLAUER, K.M. KRISHNAN, V.C. BEHR	
M(H) dependence and size distribution of SPIONs measured by atomic magnetometry	140
SIMONE COLOMBO, VICTOR LEBEDEV, ZORAN D. GRUJIĆ, VLADIMIR DOLGOVSKIY, ANTOINE WEIS.	
The Design of Magnetic Particle Imaging Gradient Magnetic Field Generator using Finite Element Method	141
SHIQIANG PI, JINGJING CHENG, WENZHONG LIU	
A 1.4 T/m Field Free Line Magnetic Particle Imaging Device	142
MATTHIAS WEBER, KLAAS BENTE, STEFFEN BRUNS, ANSELM VON GLADISS, MATTHIAS GRAESER, THORSTEN M. BUZUG	

Session 5: Application 2

Assessing flow dynamics in a 3D printed aneurysm model by magnetic particle imaging	145
JAN SEDLACIK, ANDREAS FRÖLICH, JOHANNA SPALLEK, NILS D. FORKERT, TOBIAS D. FAIZY, FRANZISKA WERNER, TOBIAS KNOPP, DIETER KRAUSE, JENS FIEHLER, JAN-HENDRIK BUHK	
Differential pick-up coils in magnetic particle spectrometry to detect low concentration SPIO nanoparticle tracers	146
BHARADWAJ MURALIDHARAN, THOMAS E. MILNER AND CHUN HUH	
Devices for remote magnetic operation in an MPI scanner	147
CHRISTIAN STEHNING, PETER MAZURKEWITZ, BERNHARD GLEICH, JÜRGEN RAHMER	
First Murine <i>in vivo</i> Cancer Imaging with MPI	148
ELAINE YU, MINDY BISHOP, PATRICK W. GOODWILL, BO ZHENG, MATT FERGUSON, KANNAN M. KRISHNAN, STEVEN M. CONOLLY	
In-vivo Measurements with UW-tracers in a harmonic 5.5 T/m MPI	149
MARCEL STRAUB, VERA PÄFGEN, ERIC TEEMAN, KANNAN M. KRISHNAN, FABIAN KIEBLING, VOLKMAR SCHULZ	

Multi-patch MPI allows whole body imaging of mice using a long circulating blood pool tracer C. JUNG, J. SALAMON, P. SZWARGULSKI, N. GDANIEC, M. HOFMANN, M.G. KAUL, G. ADAM, S.J. KEMP, R.M. FERGUSON, A.P. KHANDHAR AND K.M. KRISHNAN, T. KNOPP, H. ITTRICH	150
Preliminary results of a hybrid cardio vascular <i>in vivo</i> study using a highly integrated hybrid MPI-MRI system JOCHEN FRANKE, NICOLETA BAXAN, ULRICH HEINEN, ALEXANDER WEBER, HEINRICH LEHR, MARTIN ILG, MICHAEL HEIDENREICH, WOLFGANG RUHM AND VOLKMAR SCHULZ	151
Systemic Real-time Cell Tracking with Magnetic Particle Imaging BO ZHENG, MARC P. VON SEE, ELAINE YU, BELIZ GUNEL, KUAN LU, TANDIS VAZIN, DAVID V. SCHAFER, PATRICK W. GOODWILL, STEVEN M. CONOLLY	153
Session 6: Tracer Materials 1	
Keynote: High Resolution Temperature Estimation by using Magnetic Nanoparticles PROF. WENZHONG LIU	155
Localization of magnetic nanoparticles and its effect on magnetic relaxation evaluated by dynamic magnetization measurement for magnetic particle imaging YASUSHI TAKEMURA* AND SATOSHI OTA	157
In vivo velocity determination in the inferior vena cava in mice by Magnetic Particle Imaging and Magnetic Resonance Imaging MICHAEL G. KAUL, TOBIAS MUMMERT, JOHANNES SALAMON, MARTIN HOFMANN, HARALD ITTRICH, GERHARD ADAM, TOBIAS KNOPP, CAROLINE JUNG	158
Imaging brain cancer xenografts <i>in vivo</i> using tailored nanoparticles functionalized for glioma tumor targeting and MPI-NIRF contrast HAMED ARAMI, ERIC TEEMAN, ALYSSA TROKSA, HAYDIN BRADSHAW, DENNY LIGGITT, AND KANNAN M. KRISHNAN	159
Study on the <i>in vivo</i> survival of murine Ferucarbotran-loaded RBCs for their use as new MPI contrast agents ANTONELLA ANTONELLI, CARLA SFARA, ULRICH PISON, OLIVER WEBER AND MAURO MAGNANI	160
Session 7: Tracer Materials 2	
Blood half-life of a long-circulating MPI tracer (LS-008) AMIT P KHANDHAR, PAUL KESELMAN, SCOTT J KEMP, R MATTHEW FERGUSON, BO ZHENG, PATRICK W GOODWILL, STEVEN M CONOLLY AND KANNAN M KRISHNAN	163
Concentration Dependent MPI Tracer Performance NORBERT LÖWA, PATRICIA RADON, OLAF KOSCH, FRANK WIEKHORST	164
MPI Analysis of Metal Doped and Anisotropic Nanoparticles LISA M. BAUER, SHU F. SITU, MARK A. GRISWOLD, ANNA CRISTINA S. SAMIA	165
Oncogenic protease detection using magnetic particle spectrometry SONU GANDHI, HAMED ARAMI AND KANNAN M. KRISHNAN	166
Session 8: Instrumentation 2 / Methodology 3	
Imaging and Localized Nanoparticle Heating with MPI DANIEL HENSLEY, PATRICK GOODWILL, ROHAN DHAVALIKAR, ZHI WEI TAY, BO ZHENG, CARLOS RINALDI, STEVEN CONOLLY	171
Device manipulation in an MPI-Scanner DANIEL WIRTZ, CLAAS BONTUS, JÜRGEN RAHMER, PETER MAZURKEWITZ, CHRISTIAN STEHNING AND BERNHARD GLEICH	172
Magnetic particle detection based on non-linear response to magnetic susceptibility changes FLORIAN FIDLER, KARL-HEINZ HILLER, PETER M. JAKOB	173

MPI system matrix reconstruction: making assumptions on the imaging device rather than on the tracer spatial distribution	
Gael Bringout, Ksenija Gräfe, Thorsten M. Buzug	174
The Influence of Trajectory and System Matrix Overlap on Image Reconstruction Results in Magnetic Particle Imaging	
M. Ahlborg, C. Kaethner, T. Knopp, P. Szwargulski and T.M. Buzug	175
Fast Implicit Reconstruction of Focus Field Data in MPI	
P. Szwargulski, M. Hofmann, N. Gdaniec, and T. Knopp	176
Interactive Positioning and Sizing of the Imaging Volume in Real-Time Magnetic Particle Imaging	
Jürgen Rahmer, Claas Bontus, Jörn Borgert	177