

8th Global**Cardiologists & Echocardiography Annual Meeting**

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**Jens Frahm***Max-Planck-Institut für biophysikalische Chemie, Germany***Cardiovascular MRI in real time**

This lecture presents recent advances towards real-time magnetic resonance imaging (MRI) which result in high-quality image series of dynamic processes with acquisition times of only 10 to 40 milliseconds. The acquisition technique employs radially encoded gradient-echo sequences with up to 30-fold data undersampling. Image reconstruction emerges as the iterative solution of a nonlinear inverse problem which is accomplished by a bypass computer with 8 graphical processing units fully integrated into a commercial MRI system. Apart from a brief description of the acquisition and reconstruction technique, the talk will focus on applications to cardiac function, quantitative blood flow and myocardial T1 mapping. These studies may now be performed without the need for ECG synchronization and during free breathing. Taken together, real-time MRI techniques offer the chance to develop comprehensive CMR protocols which are comfortable to the patient, provide new diagnostic opportunities (e.g., immediate physiological responses to stress or exercise), are insensitive to irregular motion (e.g., patients with arrhythmia), and may even be more cost-effective (i.e., much shorter) than current examinations. Future progress is foreseeable and will involve more extensive parametric mapping studies (e.g., T2* relaxation, perfusion and temperature) and a revitalization of “interventional” MRI procedures.

Biography

Jens Frahm is the Director of Biomedizinische NMR Forschungs GmbH (non-profit) at the Max-Planck-Institute for Biophysical Chemistry in Göttingen, Germany. His research is devoted to the methodological development of magnetic resonance imaging (MRI) and the advancement of MRI in science and medicine. His publications include more than 430 articles, patents, and book chapters. For his ground-breaking work Frahm received the European Magnetic Resonance Award, the Gold Medal of the International Society for Magnetic Resonance in Medicine, the Karl Heinz Beckurts-Award for Technology Transfer, the State Award of Lower Saxony, the Research Award of the Sobek Foundation for Multiple Sclerosis and the Science Award of the Foundation for German Science.

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