In 2017, a new magnetic resonance imaging (MRI) device by General Electric and Siemens entered the marketplace with an advertised 10-fold speedup over traditional MRI and the potential to impact 80 million MRI scans annually. This talk will discuss the applications and some of the mathematics behind this advance, coming from the field of compressed sensing that leverages higher-dimensional geometry in novel ways. A key role in this development was played by many researchers who have been at Stanford in fields ranging from electrical engineering and radiology to applied mathematics and statistics. We hope to highlight some of those researchers and their work.

Professor David Donoho is the Anne T. and Robert M. Bass Professor of Humanities and Sciences and Professor of Statistics at Stanford University. He has made fundamental contributions to theoretical and computational statistics, and his algorithms have contributed significantly to our understanding of how to work with sparse data. Over the last 30 years, his research has focused on the overall big challenge of recovering information from symbols and images. Among his many awards, Professor Donoho is a MacArthur Fellow, a SIAM Fellow, and has received the Shaw Prize for Mathematics, the COPSS Presidents’ Award (regarded as the Nobel Prize of Statistics), the Norbert Wiener Prize in Applied Mathematics, and the John von Neumann Prize.