The Athinoula A. Martinos Center for Biomedical Imaging is looking for multiple Post-Doctoral Research Fellows to join a large-scale, interdisciplinary project on multi-scale brain imaging using ultra-high gradient diffusion MRI. The following positions are open for applications:

**Post-doctoral fellowship opportunity in RF coil development**

The post-doctoral fellow will develop novel MRI receive arrays for ultra-high gradient diffusion MRI in the brain. The goal is to develop RF coil arrays for in vivo and ex vivo diffusion MRI inside a next-generation ultra-high gradient 3T MRI scanner environment. The research fellow will work to validate the coils and optimize their performance for advanced diffusion-encoding and high-spatial resolution diffusion MRI acquisitions. Knowledge and experience with general electronics, circuit board design, radiofrequency circuits and MRI coils is required, including experience with software simulation of circuits and RF coils.

**Post-doctoral fellowship opportunity in pulse sequence development and image reconstruction**

The post-doctoral fellow will design and implement a suite of diffusion microstructural imaging sequences on the next-generation ultra-high gradient 3T MRI scanner. The research fellow will integrate advanced diffusion encoding sequences with novel readout schemes for high-spatial resolution in vivo and ex vivo diffusion MRI. Responsibilities will include optimizing k- and q-space trajectories for the high-performance gradient system, developing and characterizing image reconstruction performance, and performing sequence testing and optimization for in vivo and ex vivo diffusion MRI. Experience with diffusion-weighted MRI and accelerated imaging methods is preferred. Siemens IDEA/ICE programming experience is also highly desirable.

**Post-doctoral fellowship opportunity in gradient characterization**

The post-doctoral fellow will simulate and design gradient hardware optimized for high-slew rate, ultra-high gradient strength diffusion MRI. The research fellow will develop approaches to characterize and correct for eddy currents. Responsibilities will include mapping the gradient fields, developing gradient nonlinearity correction software, and incorporating information on the gradient coils and eddy currents into the diffusion preprocessing and analysis pipeline. Strong expertise in C/C++ and/or Matlab is highly desirable.

**Post-doctoral fellowship opportunity in diffusion microstructural modeling and analysis**

The post-doctoral fellow will design, acquire, and analyze diffusion microstructural imaging experiments to showcase the capabilities of the next-generation ultra-high gradient 3T MRI scanner. Responsibilities will include acquiring, analyzing and interpreting diffusion microstructural imaging data for in vivo and ex vivo human brain imaging in the next-generation ultra-high gradient MRI system. A strong background in NMR and MRI physics with specific expertise in diffusion MRI and mathematical and computational modeling is essential.

Athinoula A. Martinos Center for Biomedical Imaging at Massachusetts General Hospital is one of the largest biomedical imaging centers in the United States with over 200 research faculty, post-doctoral fellows and graduate students. The next-generation ultra-high gradient diffusion MRI project is a large-scale technical development effort involving a multi-disciplinary academic research team accompanied by industrial partners. This position offers a unique opportunity to work and collaborate with leading researchers on developing cutting-edge technology that will have a high impact on the diffusion MRI and neuroimaging communities.
Qualifications:
A PhD (or equivalent) in physics, applied physics, electrical engineering, biomedical engineering, or a related field is required. As part of a larger multi-disciplinary, multi-institutional project focused on multi-scale structural imaging and validation in the brain, the project provides exceptional possibilities for the Post-Doctoral Fellows to apply and further develop a variety of hardware, software and analysis skills.

Application:
Interested applicants should send a full CV, a cover letter, and contact information of three referees to Drs. Susie Huang (syhuang@nmr.mgh.harvard.edu) and Thomas Witzel (twitzel@mgh.harvard.edu) via email.

The position is full-time with benefits and available immediately. A two-year time commitment is required with a possible extension of another two years. Salary will be based on qualifications and experience. The Massachusetts General Hospital is an Equal Opportunity/Affirmative Action Employer.