UNIVERSITY OF

WISCONSIN-MADISON



MEDICAL PHYSICS SEMINAR

MONDAY, FEBRUARY 13, 2017

1325 HSLC - 4:00 PM



Sean Fain Ph.D. Professor of Medical Physics University of Wisconsin - Madison Wisconsin Institutes for Medical Research (WIMR)

Functional Imaging of the Lungs with Gas Contrast Agents

This talk will present the state-of-the-art of magnetic resonance imaging (MRI) with hyperpolarized (HP) gas, and molecular oxygen and their application to clinical research in pulmonary disease. During the past several years there has been accelerated development of pulmonary MRI. This has been driven in part by concerns regarding ionizing radiation using multi-detector computed tomography (CT). However, MRI also offers capabilities for fast multispectral and functional imaging using gas agents that are not technically feasible with CT. HP 129Xe in particular is poised for larger scale clinical research to investigate asthma, chronic obstructive pulmonary disease, and fibrotic lung diseases. With advances in polarizer technology and unique capabilities for imaging of 129Xe gas exchange into lung tissue and blood, HP 129Xe MRI is attracting new attention. Recent improvements in gradient performance and radial acquisition methods using ultrashort echo time (UTE) have also contributed to advances in oxygen-enhanced imaging as an alternative, more widely available, technique for imaging of ventilation. UTE MRI also provides a means to provide anatomical imaging of the lungs to provide complementary structure and function with an MRI-only protocol. Functional lung MRI methods using these gas agents are improving our understanding of a wide range of chronic lung diseases, including asthma, cystic fibrosis, and fibrotic lung diseases in both adults and children.

1325 Health Science Learning Center (HSLC) 4:00 - 5:00 P.M.