AbstractID: 14612 Title: Medical Physicist's Testing Procedures for MRI Equipment Evaluation

This presentation explores some of the test procedures and methods of analysis involved in the technical evaluation of clinical MRI systems. The ACR Accreditation Phantom has become the most common tool used for MRI system assessment. We will take a close look at the design and construction of the standard, large ACR MRI phantom and demonstrate how proper interpretation of image artifacts in phantom images can lead to insights on system performance. The new, small ACR MRI phantom will also be described. The desirable attributes of general MRI phantoms will be described and examples of various phantoms presented. The strategy used to assess low-contrast resolution will be explained and related to measurements of system Signal-to-Noise Ratio (SNR). In addition, the relative utility of several methods for the evaluation of magnetic field homogeneity will be examined. Finally, techniques for measuring the performance of RF coils, including assessment of signal intensity uniformity and signal ghosting in MR images will be discussed.

At the end of this presentation the attendee will:

1. understand the design, construction and use of the ACR MRI phantoms.
2. be mindful of several tests used to measure magnetic field homogeneity in MRI systems.
3. appreciate the utility of tests of signal intensity uniformity, SNR and ghosting.