

Abstract ID: 17260 Title: CR/DR Image Noise - Part 1

Image noise in radiographs has been classically appreciated as the visual appearance of quantum mottle. Simple statistical models suggest that low contrast target features are visible when their size and contrast exceeds the noise fluctuations of background regions. The various contrast-detail phantoms used to demonstrate this will be reviewed. However, quantitative measures of performance based on alternative choice observations from test patterns have lacked sensitivity as quality measures and are time consuming. In comparison, the Noise Power Spectrum (NPS) is easy to measure and provides useful information on low frequency noise as well as the noise texture. The framework for computing NPS will be summarized as background for the second part of this course.

Learning Objectives: 1. Review the contrast-detail test patterns that have been used to measure radiographic quality and understand their limitations, 2. Learn why first order measures of image noise, the spatial standard deviation, are NOT appropriate as a quality measure, and 3. Understand the computation framework for computing the NPS.