AbstractID: 9865 Title: MTF and ideal SNR: assessment methodologies and influencing roles

The modulation transfer function (MTF) describes the resolution characteristics of an imaging system in terms of spatial frequencies. The MTF has commonly been used to characterize the performance of digital radiographic systems. The estimation of the MTF is also a key aspect of the detective quantum efficiency (DQE) evaluation. In this presentation, the theoretical conditions and the assessment methodologies for the determination of the MTF of a digital radiographic system will be described. The merits of various methodologies will be compared. Another key quantity for the assessment of the DQE is the ideal signal to noise radio (SNR), i.e., the number of x-ray quanta impinging on the detector at a given exposure level. The presentation reviews the methods used for estimating this quantity. The presentation further discusses the quantitative impact of methodological differences in the MTF and ideal SNR estimation on the resultant DQE.

Educational Objectives:

1. To outline the theoretical basis for the quantification of resolution of imaging systems by the MTF
2. To describe and compare various methodologies for the assessment of the MTF
3. To reviews methods for the estimation of the ideal SNR
4. To discuss the impact of the MTF and ideal SNR on the estimation of the DQE