**ACHIM KEMPF**, University of Waterloo, 200 University Avenue West, Waterloo, Ontario N2T 3G1, Canada
*On an information theoretic ultraviolet cutoff in curved space*

Under certain circumstances, space-time can possess the differentiability properties of manifolds as well as the ultraviolet finiteness properties of lattices. This is the case when physical fields possess merely a finite density of degrees of freedom, in the information theoretic sense: if a field's amplitudes are given on any sufficiently dense set of discrete points this could already determine the field's amplitudes at all other points of the manifold. Any arbitrary set of samples that is sufficiently densely spaced, say at a Planck density, could be used for the reconstruction. The mathematical disciple concerned with classes of functions that can be reconstructed completely from any set of sufficiently densely chosen discrete samples, namely sampling theory, is at the heart of information theory.

Sampling theory establishes the link between continuous and discrete forms of information and is used in ubiquitous applications from scientific data taking to digital audio. Here, we present new results on sampling theory on curved space which utilize methods of spectral geometry. Further results on sampling theory on curved space-time will be presented in this meeting by my collaborator Robert Martin.