MARK HAMILTON, Mount Allison University
Integral integral affine geometry, quantization, and Riemann-Roch.

Let B be a compact integral affine manifold. If the coordinate changes are not only affine but also preserve the lattice $\mathbb{Z}^n$, then there is a well-defined notion of "integral points" in B, and we call B an *integral integral affine manifold*. I will discuss the relation of integral integral affine structures to quantization and some associated results, in particular the fact that for a regular Lagrangian fibration $M \to B$, the Riemann-Roch number of M is equal to the number of "integral points" in B. Along the way we encounter the fact that the volume of B is equal to the number of integral points, a simple claim from "integral integral affine geometry" whose proof turns out to be surprisingly tricky. This is joint work with Yael Karshon and Takahiko Yoshida.