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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 $M \rightarrow B$, 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.