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Curvature and noncommutative probability

The heat-operator related techniques lie in the intersection of the analytic backbones of probability and differential geometry. But the quantum counterparts of the two subjects both have long literature growing into different branches of mathematics. To connect the dots, I will present two constructions of spectral triples. The first one is for the notion of modular Gaussian curvature on noncommutative two tori due to Connes and Moscovici. The second one is due to Cipriani, Franz, Wysoczańska-Kula. The underlying metric (the Dirac operator) comes from so-called Schürmann triples, which are in 1-1 correspondence with quantum Lévy processes. The q -deformation of $SU(2)$ seems to be a good testing example to set up detailed computations, bridging noncommutative differential geometry and quantum stochastic calculus.