Our ability to understand the dynamics of quantum gravity at the Planck scale depends crucially on identifying and measuring observables. A well-known example is the spectral dimension of quantum spacetime, which not only exhibits a truly "Planckian fingerprint" in the form of a universal dimensional reduction, but has been important in stimulating a computational effort across approaches and an investigation of its possible phenomenological consequences. However, until recently we did not have a truly geometric observable at our disposal.

This has changed with the advent of the quantum Ricci curvature (QRC), a quantity that can be applied in extremely quantum-fluctuating regimes and reproduces the standard curvature classically [1]. After a brief overview of (Causal) Dynamical Triangulations, the framework where the QRC is being investigated extensively, I highlight some intriguing new results, including the finding of "quantum flatness" in 1+1 [2] and new insights into the quantum behaviour of spatial slices in 2+1 nonperturbative quantum gravity [3].

[1] N. Klitgaard, R. Loll, Eur. Phys. J. C 80 (2020) 10, 990, arXiv:2006.06263 [hep-th]
[2] J. Brunekreef, R. Loll, Phys. Rev. D 104 (2021) 12, 126024, arXiv:2110.11100 [hep-th]
[3] J. Brunekreef, R. Loll, to appear