

NONCOMMUTATIVE METRIC GEOMETRY OF QUANTUM SPHERES

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In this talk we investigate the noncommutative metric geometry of the higher Vaksman-Soibelman quantum spheres. More precisely, we shall see how to endow a given quantum sphere with the structure of a compact quantum metric space by means of a seminorm arising from noncommutative differential geometric data. We view our quantum sphere as a noncommutative circle bundle over the corresponding quantum projective space. Using techniques from unbounded KK-theory this point of view allows us to construct vertical and horizontal differential geometric data on the quantum sphere in question. The vertical data comes from the generator of the circle action and the horizontal data comes from the unital spectral triple on quantum projective space introduced by D'Andrea and Dabrowski. An interesting feature of our setting is that the horizontal geometric data yields a twisted derivation on the coordinate algebra whereas the vertical geometric data produces a derivation in the usual sense. Nonetheless we are able to assemble these two (twisted) derivations into a single seminorm on our quantum sphere and show that the corresponding metric on the state space metrizes the weak*-topology.