Abstract:
Many aspects of the differential geometry of embedded Riemannian manifolds, including curvature, can be formulated in terms of multi-linear algebraic structures on the space of smooth functions.
For matrix analogues of embedded surfaces, one can define discrete curvature, and a noncommutative Gauss-Bonnet theorem.
After giving a general introduction to the Poisson-algebraic reformulation for surfaces, as well as explaining a method to associate sequences of finite dimensional matrices to them, I will focus on concrete examples, including in particular noncommutative analogues of minimal surfaces.