

# Hilbert schemes, perverse sheaves and a new Schur algebra

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The Schur algebra is a finite-dimensional algebra that connects the representation theory of the symmetric and general linear groups. In joint work with Tom Braden, we give an algebraic description of the category of perverse sheaves with coefficients in a field of characteristic  $p$  on  $S^n(\mathbb{C}^2)$ , the  $n$ -fold symmetric product of the plane, in terms of a new, enhanced version of the Schur algebra. This work is motivated by a geometric description of the standard Schur algebra and the theory of symplectic duality.