TITOLO: *Surface defects, nested instantons and flags of sheaves*

ABSTRACT:

We study the effective SUSY theory of a certain surface defect describing the parabolic reduction of gauge connections at punctures on Riemann surfaces, which gives rise to a quiver GLSM. We will show how the partition function of such a theory naturally computes certain virtual invariants of the moduli spaces of stable representations of the quiver and how these results relate to a conjecture of Hausel, Letellier and Rodriguez-Villegas about the cohomology of character varieties. We will also show how the moduli space of stable representations is isomorphic to a (suitably defined) moduli space of flags of framed torsion free sheaves on the projective plane, reducing to the nested Hilbert scheme of points on the complex plane in rank 1. This quiver description enables us to compute virtual invariants on nested Hilbert schemes of points on toric surfaces.