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Line defects and link invariants

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I will describe interplay between the study of supersymmetric line defects and the construction of link invariants. As an example, a certain UV-IR map for line defects in 4d $N=2$ theories of class-S motivates a new link “invariant” (with wall-crossing behaviors) for links in three-manifolds taking the form of a surface times a real line. This new link “invariant” gives a refined counting of the ground states for the bulk-defect system; moreover it provides a new way of computing familiar link polynomials. More generally, link invariants for links in a broad class of three-manifolds could be constructed by studying supersymmetric line defects in 3d $N=2$ theories. This talk is based on joint work with A. Neitzke, as well as work in progress with D. Gaiotto, A. Khan and G. Moore.

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