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Allison Gilmore* (gilmore@math.columbia.edu), NY. *An algebraic proof of invariance for knot Floer homology.*

We investigate the algebraic structure of knot Floer homology in the context of categorification. Ozsváth and Szabó gave the first completely algebraic description of knot Floer homology via a cube of resolutions construction. Starting with a braid diagram for a knot, one singularizes or smooths each crossing, then associates an algebra to each resulting singular braid. These can be arranged into a chain complex that computes knot Floer homology. Using this construction, we give a fully algebraic proof of invariance for knot Floer homology that avoids any mention of holomorphic disks or grid diagrams. We close with an alternative description of knot Floer homology in terms of Soergel bimodules that suggests a close relationship with HOMFLY-PT homology. (Received January 18, 2011)