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Shelly Harvey and **Danielle O’Donnol*** (dodonnol@smith.edu). *Graph Floer homology*.

A natural extension of knot theory is the study of spatial graphs. A *spatial graph* is an embedding of a graph into \mathbb{R}^3 or S^3 . We defined graph Floer homology, a generalization of knot Floer homology. Graph Floer homology is a bigraded homology theory for balanced spatial graphs. We extended the notion of grid diagrams to balanced spatial graphs, and defined a set of grid moves. We proved that the bigraded homology theory we associate with a grid diagram is independent of the grid moves. Thus graph Floer homology is an invariant.

Unlike many homology theories, our theory is not the categorification of an existing polynomial invariant. Thus taking the generalized Euler characteristic gives another new invariant, an Alexander polynomial for balanced spatial graphs. (Received September 19, 2011)