1037-57-259   **John A Baldwin*** (`baldwin@math.columbia.edu`), Dept. of Mathematics, Columbia University, Room 509, MC 4406, 2990 Broadway, New York, NY 10027. *Comultiplication in Khovanov and Heegaard Floer homology.*

Suppose that Σ is a surface with boundary and that g and h are diffeomorphisms of Σ which restrict to the identity on the boundary. Let Y_g, Y_h, and Y_{hg} be the 3-manifolds with open book decompositions given by (S, g), (S, h), and (S, hg), respectively. We show that the Ozsváth-Szabó contact invariant is natural under a comultiplication map $\tilde{\mu} : \widehat{HF}(-Y_{hg}) \to \widehat{HF}(-Y_g) \otimes \widehat{HF}(-Y_h)$. We extend this comultiplication to a map on $HF^+(-Y_{hg})$, and as a result we obtain obstructions to the 3-manifold Y_{hg} being an L-space. We also use this to find restrictions on contact structures which are compatible with planar open books. If time permits, we'll discuss a connection to the spectral sequence relating the Khovanov homology of a link and the Heegaard Floer homology of its branched double cover. (Received February 04, 2008)

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