1014-57-800   **Jozef Henryk Przytycki*** (`przytyck@gwu.edu`), Department of Mathematics, George Washington University, Washington, DC 20052. *Confluence of Khovanov homology and Hochschild homology.*

We show that Khovanov homology and Hochschild homology theories share common structure. In fact they overlap: Khovanov homology of a $(2, n)$-torus link can be interpreted as a Hochschild homology of the algebra underlining the Khovanov homology. In the classical case of Khovanov homology we prove the concrete connection. In the general case of Khovanov-Rozansky, $sl(n)$, homology and their deformations we conjecture the connection. The best framework to explore our ideas is to use a comultiplication-free version of Khovanov homology for graphs developed by L. Helme-Guizon and Y. Rong and extended here to noncommutative algebras and any bimodules of coefficients. In this framework we prove that for any unital algebra A and A-bimodule M the Hochschild homology of A with coefficients in M is isomorphic to M-reduced graph homology over A of a polygon. We hope that this talk will encourage a flow of ideas in both directions between Hochschild/cyclic homology and Khovanov homology theories. (Received September 24, 2005)