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Jozef H. Przytycki* (przytyck@gwu.edu), Department of Mathematics, George Washington University, Washington, DC 20052, and **Seung Yeop Yang**. *Precubic homotopy: knot theory motivated “abstract nonsense”*.

While working on annihilation of torsion of rack homology of finite quandles (see presentation by S.Y. Yang) we came upon an object similar to presimplicial homotopy but related to structures being precubic sets. We define precubic homotopy h between precubic morphisms f and g as a collection of morphisms h_i^ϵ such that: (1) $d_i^\delta h_j^\epsilon = h_{j-1}^\epsilon d_i^\delta$ for $i < j$, (2) $d_i^\epsilon h_i^0 = d_{i+1}^\epsilon h_i^1$, $d_i^0 h_i^1 = d_{i+1}^0 h_i^0$, $d_i^1 h_i^1 = d_i^1 h_{i-1}^0$, (3) $d_i^\delta h_j^\epsilon = h_j^\epsilon d_{i-1}^\delta$ for $i > j + 1$, (4) $d_1^1 h_1^1 = f$ and $d_{n+1}^1 h_n^0 = g$ where $\epsilon, \delta = 0, 1$. We show that if h is a precubic homotopy from f to g in the category of modules then $h = \sum_{i=1}^n (-1)^i (h_i^0 + h_i^1)$ is a chain homotopy from f to g . (Received February 16, 2015)