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Jozef H. Przytycki* (przytyck@gwu.edu), Department of Mathematics, George Washington University, Washington, DC 20052. *Curtain homology: 2-(co)cycle invariants from Yang-Baxter operators.*

Soon after discovery of his link polynomial in 1984, V.F.R.Jones gave an interpretation of his invariant (and the Homflypt polynomial) using statistical mechanics language involving Yang-Baxter operator $R : V \times V \rightarrow V \times V$ (R is invertible and satisfies $(R \otimes Id)(Id \otimes R)(R \otimes Id) = (Id \otimes R)(R \otimes Id)(Id \otimes R)$). The general approach to quantum link invariants via Yang-Baxter operators was developed by Jones and Turaev in 1987. We define homology of any Yang-Baxter operator and show how to obtain a 2-cocycle invariant of links, at least in the case of column probabilistic Yang-Baxter operator. These generalize the 2-cocycle constructed by Carter et al. for set theoretic Yang-Baxter operators (and for quandles). The key in our approach is that our homology, comes from precubic module with good visualization and that the third Reidemeister move can be interpreted as the third boundary operation written in the form $\partial_3 = d_1^0 + d_2^1 + d_3^0 - (d_1^1 + d_2^0 + d_3^1)$. In particular for two proportional Yang-Baxter operators, R and R' with $R_{c,d}^{a,b} = f(a,b)(R')_{c,d}^{a,b}$ we discuss the meaning of the 2 chain $f : V \otimes V \rightarrow k$. (Received August 01, 2015)