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Philippe Di Francesco and **Rinat Kedem*** (rinat@illinois.edu), Department of Mathematics, MC-382, Urbana, IL 61821. *Non commutative rank 2 cluster algebras and the Kontsevich conjecture.*

Rank 2 cluster algebras fall into categories according to the classification of Cartan matrices as finite, affine and of determinant less than zero. Kontsevich introduced a non-commutative version of rank two discrete evolutions, which tend to the cluster algebra mutations in the commutative limit. Their behavior is very similar to the commutative case. In particular in the affine case, the evolution is integrable and we show how to use a path model on graph weighted with non commutative weights to solve them. We thus prove Kontsevich's conjecture in those cases, which states that the evolution produces only positive non-commutative Laurent polynomials, generalizing the "Laurent property" [Fomin-Zelevinsky] and positivity conjecture for cluster algebras. (Received February 04, 2010)