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Title: Quivers with potentials and their representations

This is an account of an ongoing joint work with Harm Derksen and Jerzy Weyman. We study quivers with relations given by non-commutative analogs of Jacobian ideals in the complete path algebra. This framework allows us to give a representation-theoretic interpretation of quiver mutations at arbitrary vertices. This gives a far-reaching generalization of Bernstein-Gelfand-Ponomarev reflection functors. The motivations for this work come from several sources: superpotentials in physics, Calabi-Yau algebras, cluster algebras.