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J. Hennig* (jhennig1@ualberta.ca) and **S. Sierra.** *Path algebras of quivers and representations of locally finite Lie algebras.*

We explore the (noncommutative) geometry of representations of locally finite Lie algebras. Let L be one of these Lie algebras, and let $I \subset U(L)$ be the annihilator of a locally simple L -module. We show that for each such I , there is a quiver Q so that locally simple L -modules with annihilator I are parameterized by “points” in the “noncommutative space” corresponding to the path algebra of Q . We classify the quivers that occur and along the way discover a beautiful connection to characters of the symmetric groups S_n . (Received July 05, 2016)