Grupoid L^p Operator Algebras

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I will present a disintegration theorem (generalizing results of Renault and Exel) establishing a 1:1 correspondence between representations of an ample groupoid on bundles of L^p spaces and tight L^p representations of its semigroup of compact open slices. This allows one to realize the L^p analogs of the Cuntz C*-algebras and UHF C*-algebras (recently introduced and studied by Chris Phillips) as enveloping algebras of groupoids with respect to representations on bundles on L^p spaces. More generally this construction provides several new examples of L^p analogs of well known C*-algebras, such as Cuntz-Krieger algebras, tiling algebras, and graph algebras. An upshot of this point of view is to clarify which representations of combinatorial objects on L^p spaces are well-behaved: These are precisely the representations coming from the associated groupoid. This is all joint work with Eusebio Gardella.