Virtual manifolds and holonomy groupoids of singular foliations

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To any Lie groupoid is associated a singular Stefan foliation consisting of the orbits of the groupoid. Conversely, given a singular foliation one can ask the question if a corresponding holonomy groupoid exists whose orbits correspond to the leaves of the foliation. A key insight for the construction of holonomy groupoids consists of the observation that any Lie groupoid can be viewed - in a precise sense - as a "virtual manifold", with charts consisting of the orbits and the equivalence relation given by local Morita equivalence. In this talk - based on works of Claire Debord and Jean Pradines - I will explain the construction of a holonomy groupoid for a class of singular foliations (almost regular foliations), whenever such a groupoid exists. As a corollary, when the foliation comes from a Lie algebroid which is almost injective, there is always an integrating Lie groupoid (albeit not always a universal one).