

On invariant linearization of Lie groupoids

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The Linearization Theorem for proper Lie groupoids generalizes classical results such as Ehresmann's theorem for submersions and Reeb stability for foliations. It also serves as a key tool in establishing local models for Poisson geometry. In this talk, we review the Linearization Theorem for proper Lie groupoids addressing the problem of understanding invariant linearizations. Using compatible complete metrics we give a sufficient criterion for invariant linearization. We apply our criterion to obtain the Tube Theorem for proper actions. We discuss the existence of a complete metric as a necessary condition for invariant linearization, in particular, we show it for proper regular Lie groupoids.