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Exotic resonant level models in non-Abelian quantum Hall states coupled to quantum dots[1] GREGORY A. FIETE, University of Texas at Austin, WAHEB BISHARA, California Institute of Technology, CHETAN NAYAK, Microsoft Research, Station Q and University of California Santa Barbara — We study the coupling between a quantum dot and the edge of a non-Abelian fractional quantum Hall state. We focus on the physics of level degeneracy with electron number on the dot. The physics of such a resonant level is governed by a k-channel Kondo model when the quantum Hall state is a Read-Rezayi state at filling fraction $\nu = 2 + k/(k+2)$ or its particle-hole conjugate at $\nu = 2 + 2/(k+2)$. The k-channel Kondo model is channel symmetric even without fine tuning any couplings in the former state; in the latter, it is generically channel asymmetric. The two limits exhibit non-Fermi liquid and Fermi liquid properties, respectively, and therefore may be distinguished. By exploiting the mapping between the resonant level model and the multichannel Kondo model, we discuss the thermodynamic and transport properties of the system. In the special case of $k = 2$, our results provide a novel venue to distinguish between the Pfaffian and anti-Pfaffian states at filling fraction $\nu = 5/2$. Transport through a double-point contact geometry is possibly governed by an unusual fixed point. arXiv:0911.1799

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