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Characterization of spin induced subgap states in superconductor/quantum dot/superconductor junctions GEDIMINAS KIRSANSKAS, BRIAN ANDERSEN, KARSTEN FLENSBERG, JENS PAASKE, Center for Quantum Devices, Niels Bohr Institute, University of Copenhagen, DK-2100 Copenhagen Ø, Denmark — We examine the emergence of subgap states in a junction consisting of two superconducting leads coupled to spinful Colomb blockaded quantum dot. The system is modeled by an effective Kondo model, which gives rise to so-called Yu-Shiba-Rusinov states inside the gap. We determine the dispersion of these states with an applied phase difference across the junction and study their dependence on an applied magnetic field. Also the effects of coupling asymmetry to the leads and deviation from the particle-hole symmetric point are addressed.

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