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Domain walls in tetragonal superconductors: Andreev bound states and tunneling features SOUMYA MUKHERJEE, KIRILL SAMOKHIN, Department of Physics, Brock University, KIRILL SAMOKHIN COLLABORATION — Domain walls can be formed in superconductors with a discrete degeneracy of the ground state, which breaks time reversal symmetry or a point group symmetry. We study all cases where the formation of domain walls is possible for the tetragonal point group symmetry D_{4h}. We discuss both triplet and mixed singlet order parameters. It is found that in all cases domain walls support subgap Andreev bound states, whose energies strongly depend on the direction of semiclassical propagation. We also study the density of states of these bound states and show that the formation of bound states near the domain wall strongly affects the tunneling conductance.

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