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**Detection of exchange interaction in diatomic molecules by Fano resonance** JONAS FRANSSON, ALEXANDER BALATSKY, Theoretical Division, Los Alamos National Laboratory, Los Alamos, NM 87545 — We propose a mechanism to use STM for direct measurements of the two-electron singlet-triplet exchange splitting  $J$  in diatomic molecular systems, based on the coupling between the molecule and the substrate electrons. The different pathways for electrons lead to interference effects and generate kinks in the differential conductance at the energies for the singlet and triplet. These features are related to Fano resonance due to the branched electron wave functions. Since the ratio between the tunnelling through the two atoms can be modulated by spatial movements of the tip along the surface this suggests a technique for detection of the singlet-triplet exchange splitting with STM.

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