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**Surface states in non-centrosymmetric superconductors** ANTON VORONTSOV, ILYA VEKHTER, Louisiana state university, MATTHIAS ESCHRIG, Karlsruhe university — Since the discovery of superconductivity in CePt<sub>3</sub>Si, there is a strong interest in superconducting materials without center of inversion. Lack of inversion symmetry results in strong spin-orbit interactions that lifts the spin degeneracy and leads to the mixing of ‘singlet’ and ‘triplet’ pairing channels. We consider surface bound states of a superconductor with bulk spin-orbit interactions described by a Rashba term,  $\alpha(\hat{\mathbf{z}} \times \mathbf{k}) \cdot \boldsymbol{\sigma}$ . We find that the scattering of the quasiparticle off the interface strongly mixes the two bands of opposite helicity. We analyze the properties of the surface states that appear for different surface orientations, investigate their spin structure and their possible signatures in tunneling experiments.

Anton Vorontsov  
Louisiana state university

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