

Abstract Submitted  
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**Collective modes in three-band superconductors with repulsive interband interactions**<sup>1</sup> VALENTIN STANEV, Materials Science Division, Argonne National Laboratory — I consider a simple model of a three-band superconductor with repulsive interband interactions. In such a system frustration associated with the odd number of gaps leads to the possible existence of intrinsically complex time-reversal symmetry breaking (TRSB) order parameter. I show that in this state the fluctuations of the *different* gaps are strongly coupled and this leads to the development of novel excitations, which mix the phase and amplitude oscillations. This is due to the non-trivial relative phase angle between the gaps. The energy of these excitations is less than  $2\Delta$  and thus they are true collective modes of the system.

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