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Ground states of multi-band type-I and type-1.5 superconductors and interlaced type-I/type-II layered superconducting structures in external magnetic field[1] JULIEN GARAUD, UMass Amherst, JOHAN CARLSTROM, KTH Stockholm, EGOR BABAEV, University of Massachusetts Amherst and KTH Stockholm — We report a numerical study of magnetic field-induced structures in multiband/multi-component superconductors and type-I/type-II multilayers. The magnetic ground state in these different regimes shows very rich structure formation. In particular we report vortex cluster formation in the cases of strong interband Josephson coupling. The results in particular can be applied to layered structures manufactured from interlaced layers of type-I and type-II superconductors yielding effectively the type-1.5 superconducting behavior with tunable intercomponent couplings.

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