**Exciton supersolidity in hybrid Bose-Fermi systems**

Michał Matuszewski\textsuperscript{1}, Thomas Taylor\textsuperscript{2}, and Alexey V. Kavokin\textsuperscript{2}

\textsuperscript{1} Instytut Fizyki PAN, Aleja Lotników w 32/46, 02-668 Warsaw, Poland
\textsuperscript{2} School of Physics and Astronomy, University of Southampton, Southampton, SO171BJ, United Kingdom

**Abstract**

We investigate the ground states of a Bose-Einstein condensate of indirect excitons coupled to an electron gas. We show that in a properly designed system, the crossing of a roton minimum into the negative energy domain can result in the appearance of the supersolid phase, characterized by periodicity in both real and reciprocal space. Accounting for the spin-dependent exchange interaction of excitons we obtain ferromagnetic supersolid domains. The Fourier spectra of excitations of weakly perturbed supersolids show pronounced diffraction maxima which may be detected experimentally.

**References**