We investigate the superconductivity of semimetals with a small carrier density, such as SrTiO3, bismuth and YPtBi. In these materials, the pairing instability is often described as a consequence of charge fluctuations either due to longitudinal phonons or through the dynamic screening of the Coulomb repulsion. Since the Fermi energy is small, the influence of interband transitions cannot be neglected in the dynamic pairing potential. We will discuss how this alters the superconducting critical temperature and deduce the sensitivity of the critical temperature to changes in the dielectric permittivity.

This is joint work with L. J. Godbout and W. Witczak-Krempa.

*Département de Physique, Université de Montréal, C.P. 6128, succ. Centre-ville, Montréal, QC H3C 3J7, CANADA