Unconventional superconductivity in alkali-doped fullerides close to the Mott boundary

Denis Arčon[1]

[1] *Faculty of mathematics and physics, University of Ljubljana and Institute*

The superconductivity in A_3C_{60} has been for many years explained by the phonon driven BCS theory with the *s*-wave pairing symmetry. Recent discovery that Cs_3C_{60} has an antiferromagnetic Mott-insulating (AFI) ground state and that the superconductivity appears only after Cs_3C_{60} was exposed to hydrostatic pressure [1,2] implied that the electron correlations are very important in this class of materials.

These findings open an exciting opportunity for understanding the interactions producing superconductivity in correlated electron systems, as it allow us the isolation of the influence of only electronic factors (including orbital degeneracy) without introducing any disorder or causing structural deformations. In this contribution we report on the comprehensive temperature and pressure study of the ^{13}C, and ^{133}Cs NMR in Cs_3C_{60} close to the Mott insulating phase. We show that in this part of the phase diagram $1/T_1T$ shows clear deviations from the simple Korringa relation. In addition, $1/T_1$ below the critical temperature will be analysed and discussed. These results complement our previous measurements under ambient pressure conditions, where NMR was the key experimental technique to reveal the insulating ground state and the antiferromagnetic ordering at low temperatures.

[1] Y. Takabayashi et al., Science **323**, (2009) 1585.

[2] A. Y. Ganin et al., Nature **466**, (2010) 221.