Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Electron-phonon Interaction in Graphite-Intercalation Compounds LILIA BOERI, Max-Planck-Institut für FestkörperForschung, Stuttgart, Germany, MATTEO GIANTOMASSI, Unité de Physico-Chimie et de Physique des Matériaux, Université Catholique de Louvain, B-1348 Louvain-la-Neuve, Belgium, GIOVANNI B. BACHELET, INFM Center for Statistical Mechanics and Complexity and Dipartimento di Fisica, Università "la Sapienza", Roma, Italy, OLE KROGH ANDERSEN, Max-Planck-Institut für FestkörperForschung, Stuttgart, Germany — After the discovery of superconductivity with a Tc of 11.5 K in Ca-intercalated graphite (CaC6)[1], the interest in graphite-intercalation compounds has been revived. Different pairing mechanisms, based on excitons or electron-phonon interactions, have been put forward [2]. In this contribution we first analyze, using the NMTO[3] method, the electronic structure of CaC6. We then propose a simple model, based on pure graphite, to explain superconductivity in this class of compounds. Implications on the design of new materials with similar superconducting properties are also discussed.
[1] T.E. Weller *et al.*, Nature Physics **1**, 39 (2005). [2] G. Csany *et al.*, Nature Physics **1**, 42 (2005); I. I. Mazin, cond-mat/0504127; M. Calandra and F. Mauri, . [3] O.K. Andersen and T. Saha-Dasgupta, Phys. Rev. B 62, R16219 and O.K. Andersen, T. Saha-Dasgupta and S. Ezhov, Bull. Mat. Sci. 26, 19 (2003).

Lilia Boeri
Max-Planck-Institut für FestkörperForschung, Stuttgart, Germany

Date submitted: 01 Dec 2005 Electronic form version 1.4