

Abstract Submitted  
for the MAR06 Meeting of  
The American Physical Society

**The loss of the anisotropy in the electrical conductivity in MgB<sub>2</sub> under pressure** ULISES ESTEVEZ, PABLO DE LA MORA, Depto. de Fisica, Fac. de Ciencias, UNAM, Mexico — MgB<sub>2</sub> is a multiple band superconductor, with two  $\sigma$ -bands and two  $\pi$ -bands. The  $\sigma$ -bands that are highly anisotropic are the responsible of the superconductivity in this compound. It has been shown that with Sc, C and Al doping the  $\sigma$ -bands reduce their anisotropy, but for the case of Al and C doping the bands fill up and as consequence the number of  $\sigma$ -carriers reduce and disappear which leads to  $T_c$  reduction. In this work it is shown that pressure reducing the MgB<sub>2</sub>-cell parameters which leads to an increase of the interplane  $\sigma$ -orbitals overlap. This leads to an increase of the  $\sigma$ -bands electrical conductivity in the c-direction, in other words, a reduction of the anisotropy of the  $\sigma$ -bands, on the other hand there is no band filling therefore no reduction of  $\sigma$ -carriers. This reduction as function of pressure follows a similar trend as  $T_c$ , thus showing that the anisotropy in the  $\sigma$ -bands could be an important factor of the high  $T_c$  in MgB<sub>2</sub>.

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Date submitted: 30 Nov 2005

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