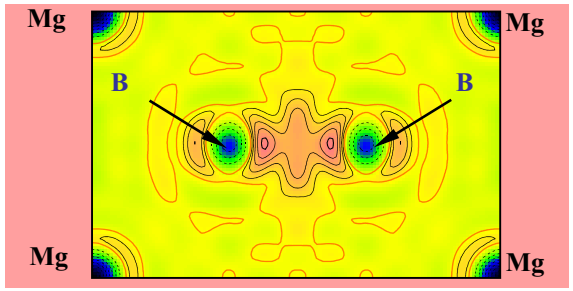
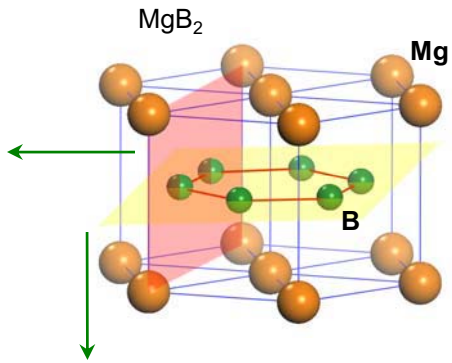
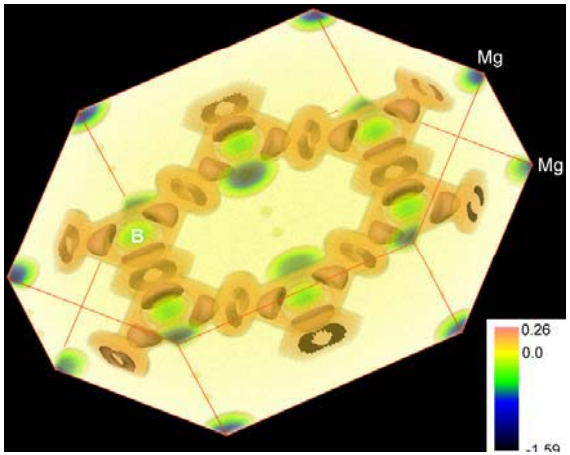
Research highlights

Mapping valence electron distribution in MgB_2 superconductor

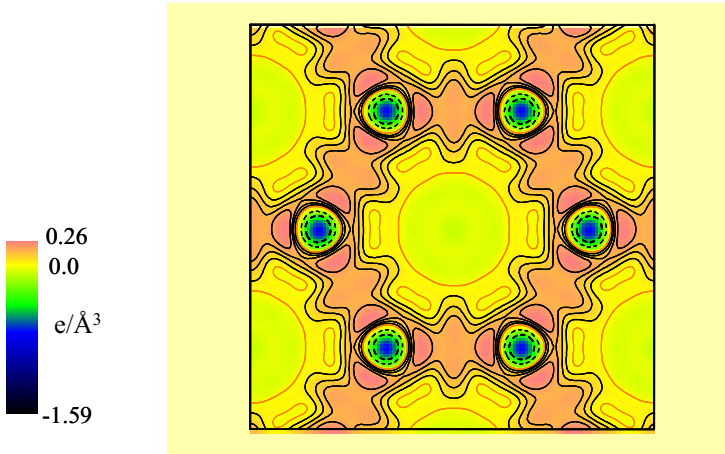


Valence electron distribution of the (110) plane in MgB_2 (pink slice in the model).





A movie clip showing a three-dimensional valence electron distribution in MgB_2.



Valence electron distribution of the (001) B-layer in MgB_2 (yellow slice in the model).

The valence electron distribution in MgB_2 was measured using an electron diffraction method developed at BNL, combined with the use of synchrotron x-ray and density functional theory calculations [1]. The electron-hole symmetry of the material was revealed by electron energy-loss spectroscopy [2].

L.Wu et al, Phys. Rev. B 69, 064501 (2004).
Y.Zhu et al, Phys. Rev. Lett. 88, 247002 (2002).