

## Inhomogeneity–induced enhancement of the pairing interaction in cuprate superconductors

Maciej M. Maška, Marcin Mierzejewski  
*Department of Theoretical Physics*  
*University of Silesia, Katowice, Poland*  
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Scanning tunneling spectroscopy has recently discovered a positive correlation between the magnitude of the superconducting gap and positions of dopant oxygen atoms in Bi-based cuprates[1]. We propose a simple mechanism that could be responsible for this effect. In particular, we demonstrate that the dopant-induced spatial variation of the atomic levels always enhances the superexchange interaction[2]. As a result the superconducting gap could increase in the vicinity of the dopant atoms. It has been known for some time that an enhancement of the pairing potential close to impurities leads to the correct sign of the impurity–gap correlation function[3]. However, in these papers the spatial variation of the pairing potential is of phenomenological origin. Contrary to this, we have proposed a microscopic mechanism that gives an explicit form of this dependence.

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