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Realization of a mixed-symmetry superconducting gap in correlated organic metals[1] MICHAELA ALTMEYER, DANIEL GUTERDING, HARALD O. JESCHKE, Institute for Theoretical Physics, Goethe-University Frankfurt, Germany, SANDRA DIEHL, TORSTEN METHFESSEL, Institute for Physics, Johannes Gutenberg-University Mainz, Germany, ULRICH TUTSCH, HARALD SCHUBERT, MICHAEL LANG, JENS MÜLLER, MICHAEL HUTH, Department of the Physical Institute, Goethe-University Frankfurt, Germany, MARTIN JOURDAN, HANS-JOACHIM ELMERS, Institute for Physics, Johannes Gutenberg-University Mainz, Germany, ROSER VALENTI, Institute for Theoretical Physics, Goethe-University Frankfurt, Germany — Recent scanning tunneling spectroscopy measurements on the organic charge tranfer salt κ-(BEDT-TTF)$_2$Cu[N(CN)$_2$]Br show clear evidence of a highly anisotropic gap structure. Based on an *ab initio* derived model Hamiltonian we employ random phase approximation spin fluctuation theory yielding a composite order parameter of (extended) s+d$_{x^2-y^2}$ symmetry. Taking explicitly also the shape of the Fermi surface into account we calculate STS spectra that are in excellent agreement to the experimental observations [1]. Moreover we determine the minimal tight binding model to describe the general lattice structure of these compounds accurately and generate a phase diagram for the gap symmetry by varying the hopping parameters. Based on *ab initio* derived parameter sets we predict the gap symmetry of other superconducting κ charge transfer salts.

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