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A proposal for giant spin-orbital resonance in AFM/SDW conductors. REVAZ RAMAZASHVILI, LPTMS, Bât. 100, Université Paris-Sud, 91405 Orsay cedex, France, SERGUEI BRAZOVSKII, LPTMS, Bât. 100, Université Paris-Sud, 91405 Orsay cedex, France — Essential dependence of the electron g-factor on the quasiparticle momentum is a fundamental property of antiferromagnetic conductors (AFM), which so far has been largely overlooked. It leads to an anomalously strong spin-orbit interaction, of which a giant combined spin-orbital resonance may be a striking manifestation. We advance a theory of this combined resonance (excitation of electron spin transitions by AC *electric* field) in a weakly doped antiferromagnetic insulator. The combined resonance intensity exceeds that of the electron spin resonance (ESR) by orders of magnitude. We study transitions in the continuous spectrum, as well as in a quantizing magnetic field, and calculate the resonance lineshape, and the angular dependence of the resonance intensity. Our predictions may be relevant for various magnetically ordered conductors, including electron- and hole-doped cuprates, and organic metals with a spin density wave (SDW).

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