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ESR lineshape for a two-dimensional spin liquid state with spinon Fermi surface[1] OLEG STARYKH, RACHEL GLENN, MIKHAIL RAIKH, University of Utah — We propose that ESR experiment can be an informative probe of a putative spin-liquid ground state with a spinon Fermi surface. Our proposal is based on the assumption that in addition to strong and frustrated Heisenberg exchange interactions, the spins also interact via an asymmetric Dzyaloshinskii-Moriya interaction (DMI). We argue that in a spin-liquid state the DMI plays the role of a spin-orbit interaction well-known in low-dimensional conductors. Assuming further spin-orbit interaction to be of Rashba type, we calculate the ESR absorption spectrum of a two-dimensional fermion gas subject to Zeeman and spin-orbit fields. Finite spin-orbit coupling translates into a finite absorption spectrum width. Remarkably, the ESR signal diverges as an inverse square-root at the edges of the spectrum.

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