

18.

Accession Number

12189122

Author

Glushkov VV. Gorshunov BP. Zhukova ES. Demishev SV. Pronin AA. Sluchanko NE.  
Kaiser S. Dressel M.

Author/Editor Affiliation

Glushkov VV. Gorshunov BP. Zhukova ES. Demishev SV. Pronin AA. Sluchanko NE. : A.M.  
Prokhorov General Physics Institute, RAS, 38, Vavilov Street, Moscow 119991, Russia

Kaiser S. Dressel M. : Physikalisches Institut, Universitat Stuttgart, Pfaffenwaldring 57, Stuttgart  
70550, Germany

Title

Spin excitations of the correlated semiconductor FeSi probed by THz radiation

Source

Physical Review B (Condensed Matter and Materials Physics), vol.84, no.7, 15 Aug. 2011,  
073108 (4 pp.). Publisher: American Physical Society, USA.

Abstract

By direct measurements of the complex optical conductivity  $\sigma(\nu)$  of FeSi, we have discovered a broad absorption peak centered at frequency  $\nu_0(4.2\text{ K}) \approx 32\text{ cm}^{-1}$  that develops at temperatures below 20 K. This feature is caused by spin-polaronic states formed in the middle of the gap in the electronic density of states. We observe the spin excitations between the electronic levels split by the exchange field of  $H_e = 34 \pm 6\text{ T}$ . Spin fluctuations are identified as the main factor determining the formation of the spin polarons and the rich magnetic phase diagram of FeSi. (29 References).