

TOPICAL REVIEW

Magneto-optical studies of low-dimensional organic conductors

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Abstract. Our periodic orbit resonance (POR) results on quasi-two-dimensional (q2D), highly anisotropic q2D and quasi-one-dimensional (q1D) organic conductors are reviewed together with our rotational cavity magneto-optical measurement system. Higher order POR up to seventh order has been observed in the q2D system (BEDT-TTF)₂Br(DIA), and the experimental conditions to observe POR and the cyclotron resonance (CR) are discussed. Highly anisotropic q2D Fermi surface (FS) in β⁻-(BEDT-TTF)(TCNQ), which was considered to have q1D FS previously, is proposed by our POR measurements, and the possible interpretations of other experimental results of β⁻-(BEDT-TTF)(TCNQ) are discussed assuming the highly anisotropic q2D FS. Finally, detailed q1D FS of (DMET)₂I₃, obtained from our POR results, is discussed in connection with the typical q1D system (TMTSF)₂ClO₄.

Keywords: periodic orbit resonance, Fermi surface, low-dimensional organic conductors, magneto-optical measurements

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