

Abstract Submitted
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Observation of the Aharonov-Bohm Effect in Self-Assembled InGaAs/GaAs Nano-Volcanoes¹ N.A.J.M. KLEEMANS, P. OFFERMANS, J.H. WOLTER, P.M. KOENRAAD, Department of Semiconductor Physics, TU Eindhoven, The Netherlands, I.M.A. BOMINAAR-SILKENS, U. ZEITLER, P.C.M. CHRISTIANEN, J.C. MAAN, High Field Magnet Laboratory, IMM, Radboud University Nijmegen, The Netherlands, D. GRANADOS, J.M. GARCÍA, Instituto de Microelectrónica de Madrid, CSIC, Spain, V.M. FOMIN, V.N. GLADILIN, J.T. DEVREESE, TFVS, Universiteit Antwerpen, Belgium — According to our X-STM data, self-assembled InGaAs/GaAs nano-volcanoes are characterized by an asymmetric rim and a depression rather than an opening at the center. We show that these asymmetric singly connected structures still can effectively manifest the electronic properties, like the Aharonov-Bohm (AB) oscillations, peculiar to the doubly connected geometry of ideal rings. AB oscillations in the persistent current are observed in low temperature magnetization measurements using torsion magnetometry in magnetic fields up to 15 T. The experimental results are in excellent agreement with theoretical predictions for strained nano-volcanoes.

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Vladimir Fomin
TFVS, Universiteit Antwerpen, Belgium

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