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Einladung zum



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT

**NANOELEKTRONISCHEN FRÜHJAHRSKOLLOQUIUM**

**Dienstag, 15.03.2011, 14:00 Uhr ct**

**Ort: S2 17/103**

zum Thema

**„Vom Material zum nanoelektronischen Bauelement“**

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mit Gastvortrag von Prof. Frank Schwierz, TU Ilmenau

**Graphene Transistors 2011 – Prospects and Problems**

Frank Schwierz

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- Graphene is a promising electronic material and numerous experts already see it as the successor of silicon. Many groups are successfully fabricating graphene transistors, and graphene MOSFETs with record cutoff frequencies of 300 GHz have been reported. However, in spite of this progress, the prospects of graphene for future electronic applications are still not clear. The aim of the present paper is to shed some light on the merits and problems of graphene transistors and to review their current state-of-the-art. We discuss the properties of graphene relevant for transistors, in particular the zero-gap nature of large-area graphene, the options to open a gap, and the relation between gap and mobility. An overview of the basic structures, of the state-of-the-art performance, and of limitations of graphene MOSFET is provided. Finally, alternative graphene-based transistor concepts and some results of graphene research at TU Ilmenau are presented.
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