

Module description

Module title					Abbreviation
Field Theory in Solid State Physics					11-FTFK-161-m01
Module coordinator				Module offered by	
Managing Director of the Institute of Theoretical Physics Faculty of Physics and Astronomy and Astrophysics					
ECTS	Metho	od of grading	Only after succ. compl. of module(s)		
8 numerical grade					
Duration		Module level	Other prerequisites		
1 semester		graduate			
Contents					
 This will usually be a course on quantum many particle physics using the method of functional integration. An outline could be: 1. Coherent states and review of second quantization 2. The functional integral formalism at finite temperatures T 3. Perturbation theory at T=0 4. Order parameters and broken symmetry 5. Green's functions 6. The Landau theory of Fermi liquids 7. Further developments 					
Intended learning outcomes					
The students are enabled to apply the modern methods of path and functional integrals to quantum many-partic- le systems. These methods complement the traditional methods of Green's functions and Feyman diagrams.					
Courses (type, number of weekly contact hours, language — if other than German)					
V (4) + R (2) Module taught in: German or English					
Method of assessment (type, scope, language — if other than German, examination offered — if not every semester, information on whether					
module is creditable for bonus)					
written examination (approx. 90 to 120 minutes) or oral examination of one candidate each (approx. 30 minutes) or oral examination in groups (groups of 2, approx. 30 minutes per candidate) or project report (approx. 8 to 10 pages) or presentation/talk (approx. 30 minutes). If a written examination was chosen as method of assessment, this may be changed and assessment may in- stead take the form of an oral examination of one candidate each or an oral examination in groups. If the method of assessment is changed, the lecturer must inform students about this by four weeks prior to the original exami- nation date at the latest. Assessment offered: In the semester in which the course is offered and in the subsequent semester Language of assessment: German and/or English					
Allocation of places					
Additional information					
Workload					
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Module appears in					

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Master's degree (1 major) Mathematics (2016) Master's degree (1 major) Physics (2016) Master's degree (1 major) Mathematical Physics (2016) Master's degree (1 major) Computational Mathematics (2016) Master's teaching degree Gymnasium MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Supplementary course MINT Teacher Education PLUS, Elite Network Bavaria (ENB) (2016) Master's degree (1 major) Computational Mathematics (2019) Master's degree (1 major) Mathematics (2019)

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