

PHY-M-VF 5

Effective WS 2011/12

1. Module title:		Low Temperature Physics			
2. Field / responsibility of:		Physics / the faculty, the Dean of Studies			
3. Module contents:		<ul style="list-style-type: none"> • Liquefaction of gases • Helium cryostats • Thermometry • Ultracold atomic gases • Bosons: Superfluid helium-4 • Fermions: Helium 3 • The $^3\text{He}/^4\text{He}$ dilution refrigerator • Ginzburg-Landau theory • Type II superconductors • Josephson junctions • High-temperature superconductors 			
4. Qualification objectives of the module / competencies to be acquired:		Acquiring a fundamental knowledge of low temperature physics as well as of quantum fluid characteristics			
5. Prerequisites for participation:					
a) Recommended knowledge:		Experimental physics IV: Thermodynamics			
b) Prerequisite courses:		None			
6. Module can be used for:		MSc. in Physics, MSc. in Nanoscience, MSc. in Comp. Science; BSc. in Nanoscience, BSc. in Comp. Science			
7. Module is offered:		On a yearly basis			
8. Module can be completed in:		1 semester			
9. Recommended semester of study:		Minimum: 1			
10. Overall module workload / number of credit points:		Workload: Total number of hours: 240 Allocation: 1. Attendance: 4 credit hours 2. Independent study (including exam preparation/ exam): 180 hours Credit points: 8			
11. The module is successfully completed when the requirements below have been met.					
12. Module components:					
Nr.	Req./req. elective	Form of teaching	Subject area / topic	Credit hours	Coursework
PHY-M-VF 5 .1	Required elective	Lecture	Low temperature physics	4	

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13. Module exam:					
Nr.	Competence / topic	Type of exam	Duration	Time / notes	Weighting for module grade
PHY-M-VF 5 .1	Low temperature physics			Type of exam: Oral or written; duration: 20 min, or 105 min, 135 min or 210 min (if it consists of two parts); time: Lecture period to end of semester	1
14. Notes:					
Further information will be provided by the instructors at the beginning of the course.					