

## Solid State Theory, SoSe2020 (Lecturer: Hong-Hao Tu)

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Lectures Tutorials	Wed + Thu Thu	Topic
L1	08.04.20	<b>General introduction + Lattice dynamics</b> classical theory
L2	09.04.20	<b>Lattice dynamics</b> quantum theory
L3	15.04.20	<b>Lattice dynamics</b> crystal structure, reciprocal lattice
T1	16.04.20	
L4	22.04.20	<b>Lattice dynamics</b> thermodynamics, Debye vs. Einstein model
L5	23.04.20	<b>Electron gas</b> free electron gas at zero temperature
L6	29.04.20	<b>Electron gas</b> second quantization, free electron gas at finite temperature
T2	30.04.20	
L7	06.05.20	<b>Electron gas</b> interacting electron gas
L8	07.05.20	<b>Electron gas</b> Hartree-Fock theory
L9	13.05.20	<b>Band electrons</b> Bloch theorem
T3	14.05.20	
L10	20.05.20	<b>Band electrons</b> nearly free electrons
	21.05.20	<b>Christi Himmelfahrt (public holiday)</b>
L11	27.05.20	<b>Band electrons</b> tight-binding model, LCAO, Wannier functions
T4	28.05.20	
L12	03.06.20	<b>Band electrons</b> graphene
L13	04.06.20	<b>Theory of electron transport</b> classical theory
L14	10.06.20	<b>Theory of electron transport</b> semiclassical theory
T5	11.06.20	
L15	17.06.20	<b>Theory of electron transport</b> Boltzmann equation
L16	18.06.20	<b>Quantum Hall effect</b> Landau levels
L17	24.06.20	<b>Quantum Hall effect</b> integer quantum Hall effect
T6	25.06.20	
L18	01.07.20	<b>Quantum Hall effect</b> quantization of Hall conductance
L19	02.07.20	<b>Quantum Hall effect</b> fractional quantum Hall effect
L20	08.07.20	<b>Magnetism</b> direct exchange vs. superexchange
T7	09.07.20	
L21	15.07.20	<b>Magnetism</b> classical and quantum Heisenberg models
L22	16.07.20	<b>Magnetism</b> spin-wave theory, magnons