

北京理工大学国际暑期学校活动安排计划表

时间	活动安排	主讲人
July 17 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Ginzburg-Landau functional and basic equations. Superconducting order parameter, Cooper pair wave function, supercurrent and London equation, boundary conditions. (2 class hours)</p> <p>2. Microscopic BCS theory of superconductivity (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>Surface electronic states. Quasiparticle interference and quantum corrals (2 class hours)</p>	<p>1. Melnikov</p> <p>2. Bobkova</p> <p>3. Aladyshkin</p>
July 18 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Magnetic properties of superconductors: Ginzburg-Landau approach. Vortex matter. (2 class hours)</p> <p>2. Formalism of Bogolubov- de Gennes equations (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>Quantum-size effects and tunneling interferometry (2 class hours)</p>	<p>1. Melnikov</p> <p>2. Bobkova</p> <p>3. Aladyshkin</p>
July 19 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Proximity effect and Josephson phenomena: Ginzburg-Landau approach. (2 class hours)</p> <p>2. Andreev reflection, Andreev bound states, (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>Surface, edge and domain-wall superconductivity in nanostructured hybrid samples (2 class hours)</p>	<p>1. Melnikov</p> <p>2. Bobkova</p> <p>3. Aladyshkin</p>

July 20 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Blonder-Tinkham-Klapwijk Formalism (2 class hours)</p> <p>2. Thermodynamic aspects of physics of surfaces and interfaces (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>3. Bound electrons: optical response of non-polar and polar dielectrics (2 class hours)</p> <p>4. Homework discussion</p>	<p>1. Bobkova</p> <p>2. Aladyshkin</p> <p>3. Bobkov</p> <p>4. Bobkova, Aladyshkin</p>
July 21 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Cryogenic Scanning probe microscopy for superconducting heterostructures: Cryogenic Scanning Tunneling Microscopy (2 class hours)</p> <p>2. Electrodynamics of electrons in metals: Drude conductivity model, normal and anomalous skin effect, surface impedance (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>Homework discussion</p>	<p>1. Stolyarov</p> <p>2. Bobkov</p> <p>3. Bobkova, Aladyshkin</p>
July 24 <sup>th</sup>	<p>Morning: (8:50-10:40) (10:45-12:20)</p> <p>1. Cryogenic Scanning probe microscopy for superconducting heterostructures: Cryogenic Magnetic Force Microscopy (2 class hours)</p> <p>2. Electrodynamics of the superconducting state: spectral fingerprints of zero-frequency conductivity delta function and energy gap in the density of states (2 class hours)</p> <p>Afternoon: (14:10-16:00)</p> <p>Homework discussion</p>	<p>1. Stolyarov</p> <p>2. Bobkov</p> <p>3. Bobkova, Aladyshkin</p>