

## MCC015 - Superconducting devices: fundamentals and applications

### MPNAT - NANOTECHNOLOGY, MSC PROGR, Y2020-LP4

Date	Lecture time&place	Contents	Lecturer
Tuesday 24/03	1 <sup>st</sup> 10:00-11:45 <b>MC2 Room C511</b>	Introduction to superconducting devices; electrodynamics of superconductors	Alexei Kalaboukhov
Friday 27/03	2 <sup>nd</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect I</b> DC and AC Josephson effects	Alexei Kalaboukhov <b>(1 home exercise)</b>
Tuesday 31/03	3 <sup>rd</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect II</b> magnetic field dependence, electromagnetic field in a junction	Floriana Lombardi
Friday 03/04	4 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect III</b> magnetic field dependence, electromagnetic field in a junction	Floriana Lombardi
Friday 17/04	5 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect IV</b> RCSJ model	Floriana Lombardi <b>(1 home exercise)</b>
Tuesday 21/04	6 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect VI</b> SFS and Pi-junctions, fabrication technology	Alexei Kalaboukhov
Friday 24/04	7 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>SQUIDs I</b>	Alexei Kalaboukhov
Tuesday 28/04	8 <sup>th</sup> 10:00-11:45 <b>MC2 Room A820</b>	<b>SQUIDs II</b>	Alexei Kalaboukhov <b>(1 Home exercise)</b>
Tuesday 05/05	9 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	Single electron devices	Per Delsing
Friday 08/05	10 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	Superconducting qubits	Per Delsing <b>(1 Home exercise)</b>
Tuesday 12/05	11 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Reserved Slot</b>	
Friday 15/05	12 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect VII</b> Long junctions, Shapiro steps, flux flow oscillators, Mixers	Dag Winkler
Tuesday 19/05	13 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	<b>Josephson effect VIII</b> Long junctions, Shapiro steps, flux flow oscillators, Mixers	Dag Winkler
Tuesday 26/05	14 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	Superconducting resonators and filters	Thilo Bauch
Friday 29/05	15 <sup>th</sup> 10:00-11:45 <b>MC2 Room C511</b>	Linear electrodynamics, surface impedance, skin effect	Thilo Bauch <b>(1 Home exercise)</b>
<b>Wednesday 03/06</b>	<b>14:00-18:00 J</b>	<b>Examination</b>	