

ESAS Summer School on Superconductivity June 2011

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July 9, 2011 (HE60). The ESAS Summer School on Superconductivity 2011 was held at the Harjattula Mansion in Turku, Finland, from 12 to 17th of June, 2011. The School was organized in co-operation with Universities of Turku and Jyväskylä, Tampere University of Technology and Prizztech Magnet Technology Centre.

The School was the latest in a series of summer schools organized in co-operation by Karlsruhe Institute of Technology, Grenoble Institute of Technology and Prizztech Magnet Technology Centre started 2008. The venue, Harjattula Mansion, is located in the archipelago outside of Turku.

The main purpose of the annual Summer School is to offer European students and young scientists interested in superconductivity a possibility to learn in a relatively short time and from the best possible experts the basics and latest developments in theory, materials and applications of superconductivity. The Summer School mainly targets post graduate students but young industry professionals are welcome as well. The School also gives participants an opportunity for networking, which is believed to benefit the European superconductivity community. This year the School attracted 23 students from seven countries.



Fig.1. Island Loistokari

The tutorial of the School was rather traditional with lectures on theory, available materials and existing applications with emphasis on energy and medical applications. The entire program is given in Table 1 below, and only some lectures are mentioned here.

As probably every superconductivity event this year, the School was started with a lecture on history of superconductivity. Jarl-Thure Eriksson, chancellor of Åbo Akademi, the oldest university in Finland, gave attendance a comprehensive review of , not only on the history of superconductivity in general, but also on the early history of Finnish research on superconductivity, in which Chancellor Eriksson himself played a major role.

The theory behind superconductivity was revealed very successfully by Prof Per Hedegård with his unique style sans power point. Obviously, he managed to put some life in theory as the lecture was voted as the best. Flux dynamics, which was voted as the second most interesting subject, was covered by Prof Petriina Paturi.

“Industrial visit” was made to the PET- and MRI-centrums of the university hospital of Turku, where students had possibility to get some “hands on” experience on medical imaging. The visit was followed by a lecture on MRI and positron therapy by Tim Havens of GE Healthcare.

Each student was asked to bring a poster on his/hers research work and give a short presentation about it. The posters were let on the walls of the class room, which resulted to many lively discussions during the week.

The School was finished by a lecture on future of the superconductivity by Prof. Alex Braginski. The lecture, which students voted as the second best in the School, brilliantly gave an overview of the multitude of present and future applications of superconductivity.

Highlight of the social events was probably the cruise on steam ship “Ukkopekka” through the archipelago to the island “Loistokari” (Figure 1), a former base of sailing ship pilots. Figure 2 (below) shows the participants preparing to board the ship. Gliding between the innumerable islands under the (almost) midnight sun was an unforgettable experience.

In the opinion of many participants The School was useful and quite successful. Next year the School will be organized by the Grenoble Institute of Technology.

Primary funding for the summer School came this year from The Regional Council of Satakunta. Further Support was received from ESAS, IEEE-CSC, Aalto University and from Luvata Superconductors Ltd.

Credit: Pictures by Yasha Nikolsin



Fig. 2. Summer School participants in Turku in front of s/s Ukkopekka

Summer school on Superconductivity, Turku Harjattula Mansion

Time	Sun 12.6.	Mon 13.6.	Tue 14.6	Wed 15.6.	Thu 16.6.	Fri 17.6.
9-10:30		Superconductivity Centenary Chancellor J.T.Eriksson Åbo Akademi	Flux Pinning Prof. P. Paturi University of Turku	AC Losses Mika Lyly TUT	MRI & PET Tim Havens GE Healthcare	Superconducting detectors: principles and application: from gamma rays to submillimeter radiation Prof. I. Mazulin Jyväskylä University Introduction to SQUID: and their applications Jari Pautila CEO, Aivon Ltd
11-12:30		Theory behind Prof. P. Hodgford Univ. Copenhagen	Industrial Manufacturing of Low Temperature Superconducting (LTS) Wires Mikael Holm Luvata Oy	Design principles of Superconducting magnets Aki Korpela TUT	Status of Development of Superconducting Fault Current Limiters (SCFCL) and SC Cables Prof. M. Now KIT	Future of SC: Trends, Certainties and Uncertainties I Materials, Conductors, Large Scale Applications II Electronics and its Applications Prof. A. Braginski FZ Jülich
		Lunch	Lunch	Lunch	Lunch	Lunch
14:00-15:30		Superconducting Magnetic Energy Storage (SMES) & transformers Prof. P. Tixador G2Elab	HTS Materials: History, Present Status and Outlook Dr. A. Usoskin Bruker HTS GmbH	Cryogenics Risto Mikkonen TUT	HTS Rotating machines Dr. W. Nick Siemens AG	
16:00-17:30		Posters 16-19	MgB ₂ : A Two-gap Superconductor for practical application Dr. M. Tropicano Columbus SC SpA	Industry visit PET-centre of Turku univ. hospital Dr. M. Toivä	The ITER Magnet System: Status of Design and Procurement Dr. P. Valente Fusion for Energy (F4E)	
19:00	Get together	Dinner	Dinner	School Dinner Officers Club in Turku	Cruise on s/s Ukkopekka in Turku archipelago 19-23	
21:00		Sauna				

TUT = Tampere University of Technology
KIT = Karlsruhe Institute of Technology