

**ISR SUMMER SCHOOL**  
24–30 July 2016  
Sodankylä Geophysical Observatory  
Sodankylä, Finland

**Agenda**

**Sunday**

- 11:00 Shuttle from Rovaniemi train station to Sodankylä
- 13:00 *Lunch*  
Free – possibly walking tour of Sodankylä for those interested.
- 19:00 *Dinner (provisions available for participants, as arrivals are staggered)*  
*Dinner Meeting for lecturers and organizers at LAO*

- Summer school staff will be at LAO to answer questions

**Monday**

- 07:30 *Breakfast*
- 08:30 Welcome (*Thomas Ulich, Craig Heinselman, Elizabeth Kendall, Mary McCready*)  
Introduction of participants and instructors (*Thomas Ulich*)  
Addressing computer needs and other logistics (*Timo Rantala, Bill Rideout*)  
Group assignments (*Elizabeth Kendall*)
- 09:30 Introduction to the ionosphere 1 (*Anita Aikio*)
- 10:15 *Break*
- 10:45 Radar as a black box (*Bill Rideout*)
- 11:30 Basic Radar 1 (*Anthea Coster*)
- 12:15 *Lunch*
- 13:30 Shuttle to SGO followed by brief tour of SGO by bus
- 14:00 Incoherent scatter radar theory 1 (*Anja Strømme*)
- 15:00 Ionosphere – radar data examples (*Anita Aikio*)
- 15:15 *Break*
- 15:45 MADRIGAL database and group work (*Bill Rideout*)
- 18:00 Shuttle to LAO
- 18:30 *Dinner*
- 20:00 Elective: MIT IAP Small Radar discussion and demonstration (*Phil Erickson*)

**Tuesday**

- 07:30 *Breakfast*
- 08:30 Ionosphere – radar data (*Anita Aikio*)
- 08:45 Basic Radar 2 (*Roger Varney*)
- 09:30 Incoherent scatter radar theory 2 (*Phil Erickson*)
- 10:15 *Break*
- 10:45 Incoherent scatter radar theory 3 (*Phil Erickson and Anja Strømme*)
- 11:30 Pulse coding and compression (*Phil Erickson*)

- 12:00 *Lunch*
- 13:00 Experiment design, data analysis and fitting as well as EISCAT modes (*Anja Strømme and Carl-Fredrik Enell*)
- 13:45 Millstone Hill, Sondrestrom and PFISR modes during experiments (*Phil Erickson, Mary McCready and Roger Varney*)
- 14:00 Experiment Design (group work)
- 15:00 *Break*
- 15:30 Experiment Design (cont)
- 17:00 Deadline to submit group experiments
- 17:30 Start of Experiment Night – see separate timetable
- *Dinner* (18:00 to 20:00), interleaved with experiments
  - walking tours of SGO, interleaved with experiments
  - shuttles between SGO and LAO as needed

### **Wednesday**

- 07:30 *Breakfast*
- 08:30 Excursion
- 13:00 *Lunch*
- 14:00 EISCAT Scientific Association (*Craig Heinselman*)
- 14:30 The NSF Upper Atmosphere Facilities program (*John Meriwether*)
- 15:00 History of Radar (including some facts about SGO; *Thomas Ulich*)
- 15:30 Retrieve radar data and start to work on group assignments (coffee available for *break*)
- 19:00 *Banquet*

### **Thursday**

- 07:30 *Breakfast*
- 08:30 Pitfalls in geophysical data: dealing with errors (*Thomas Ulich*)
- 09:15 Data analysis and fitting 2 (*Roger Varney*)
- 10:00 *Break*
- 10:30 Data analysis and fitting 3
- IS fitting (*Phil Erickson*)
  - GUISDAP (*Carl-Fredrik Enell*)
- 11:15 EISCAT Science (*Esa Turunen, Ian McCrea, and Anita Aikio*)
- 12:00 *Lunch*
- 13:30 Interpreting incoherent scatter radar data (*Ian McCrea*)
- 14:00 Work on assignment and presentation (coffee available for *break*)
- 19:00 *Dinner*

### **Friday**

- 07:30 *Breakfast*
- 08:30 Question and answer session (*all*)
- 10:00 *Break*
- 10:30 Active ionospheric modification (*Antti Kero*)
- 11:15 Phased arrays (*Craig Heinselman*)
- 12:00 *Lunch*

13:30 AMISR (*Roger Varney*)  
14:00 EISCAT\_3D (*Craig Heinselman*)  
14:30 Work on assignments and presentations (coffee available for *break*)  
19:00 *Dinner*

**Saturday**

07:30 *Breakfast*  
08:30 Student presentations (3x30 min)  
10:00 *Break*  
10:30 Student presentations (3x30 min)  
12:00 *Lunch*  
13:30 Student presentation (1x30 min)  
14:00 Conclusions, Evaluations, and Closing Discussions  
15:00 Packing for departure  
15:30 Shuttle from Sodankylä to Rovaniemi train station