

Program: 2nd NSSC Summer School in Nuclear Analytical Techniques

Date	Location	Speaker	Topic	Team A	Team B	Team C	Team D
08/18/13	SUNDAY						
8:00	185 Physics		Coffee				
8:20	185 Physics	Mani Tripathi	Brief Overview of the NSSC Program				
8:30	185 Physics	Bob Svoboda	Basic Nuclear Physics: Nuclear decay and Reactors				
9:45	185 Physics		Break				
10:00	185 Physics	Bob Svoboda	Basic Nuclear Physics: Reactor Physics				
11:00	185 Physics		Exp. Activities	NAA 1	NAA 1	PMT 1	Gamma 1
12:00	185 Physics		Lunch	Mani			
13:00			Exp. Activities	NAA 2	ELEC 1	PMT 1	Gamma 1
14:00			Exp. Activities	break	NAA 2	Gamma 1	PMT 1
15:00			Exp. Activities	ELEC 1	break	Gamma 1	PMT 1
16:00	185 Physics	Mani Tripathi	Front-end Electronics for Nuclear Instrumentation				
08/19/13	MONDAY						
8:30	185 Physics		Coffee				
9:00	185 Physics	Alex Navrotsky	Materials Chemistry Issues around Nuclear Fuel				
10:00			Exp. Activities	NAA 3	NAA 3	NAA 1	NAA 1
11:00			Exp. Activities	NAA 3	NAA 3	NAA 2	PMT 2
12:00	185 Physics		Lunch	Morgan			
13:00			Exp. Activities	NAA 3	NAA 3	ELEC 1	PMT 2
14:00			Exp. Activities	NAA 3	NAA 3	PMT 2	NAA 2
15:00			Exp. Activities	NAA 3	NAA 3	PMT 2	ELEC 1
16:00	185 Physics	Spencer Hartman	Proton Cyclotrons				
08/20/13	TUESDAY						
8:30	185 Physics		Coffee				
9:00	185 Physics	Bob Svoboda	Scintillation and Solid State Detectors				
10:00			Exp. Activities	PMT 1	Gamma 2	NAA 3	NAA 3
11:00			Exp. Activities	PMT 1	Gamma 2	NAA 3	NAA 3
12:00	185 Physics		Lunch	Bob			
13:00			Exp. Activities	Gamma 2	NAA 4	NAA 3	NAA 3
14:00			Exp. Activities	Gamma 2	PMT 1	NAA 3	NAA 3
15:00			Exp. Activities	NAA 4	PMT 1	NAA 3	NAA 3
16:00	185 Physics	Jerry Bushberg	Medical Exposure to Ionizing Radiation: Risks/Benefit Equation & Opportunities for Improvement				
08/21/13	WEDNESDAY						
8:30	185 Physics		Coffee				
9:00	185 Physics	Mani Tripathi	Digital Electronics and Data Acquisition				
10:00			Exp. Activities	PMT 2	Gamma 1	ELEC 2	Gamma 2
11:00			Exp. Activities	PMT 2	Gamma 1	ELEC 2	Gamma 2
12:00	185 Physics		Lunch	Bob			
13:00			Exp. Activities	NAA 4	Gamma 3	break	ELEC 2
14:00			Exp. Activities	Gamma 1	Gamma 3	PMT 3	ELEC 2
15:00			Exp. Activities	Gamma 1	NAA 4	PMT 3	break
16:00	185 Physics	Marc Bergevin	Double Chooz Detector				

08/22/13	THURSDAY						
8:30	185 Physics		Coffee				
9:00	185 Physics	Jeremy Mock	LUX detector				
10:00			Exp. Activities	PMT 3	ELEC 2	Gamma 2	NAA 4
11:00			Exp. Activities	PMT 3	ELEC 2	Gamma 2	NAA 4
12:00	185 Physics		Lunch	Sergey			
13:00			Exp. Activities	ELEC 2	PMT 2	NAA 4	Gamma 3
14:00			Exp. Activities	ELEC 2	PMT 2	NAA 4	Gamma 3
15:00	185 Physics	Chris Grant	Bethe-Bloch energy loss and Bragg Peak				
16:00			Exp. Activities	Proton 1	Proton 1	Proton 1	Proton 1
08/23/13	FRIDAY						
8:30	185 Physics		Coffee				
9:00	185 Physics	Rich Ott	Sudbury Neutrino Detector				
10:00			Exp. Activities	Proton 2	Proton 2	Proton 2	Proton 2
11:00			Exp. Activities	Proton 2	Proton 2	Proton 2	Proton 2
12:00	185 Physics		Lunch	Jeremy			
13:00			Exp. Activities	Gamma 3	PMT 3	Proton 3	Proton 3
14:00			Exp. Activities	Gamma 3	PMT 3	Evaluation	Evaluation
15:00			Exp. Activities	Proton 3	Proton 3	Gamma 3	PMT 3
16:00			Exp. Activities	Evaluation	Evaluation	Gamma 3	PMT 3
17:00	185 Physics	Bob Svoboda	Closing Remarks				

Description of Experimental Activities

		Location
NAA 1	Introduction to Neutron Activation Analysis	185 Phys
NAA 2	Prepare sample	398 Phys
NAA 3	Expose sample at the MNRC reactor. Count gamma-rays post exposure	MNRC
NAA 4	Analysis of NAA data	380 Phys
Gamma 1	Measure efficiency of NaI detector and calibrate using radioactive sources	152 Ross
Gamma 2	Measure efficiency of High Purity Ge detector, calibrate with sources	89 Phys
Gamma 3	Identify and quantify activity from unknown source	89 Phys
Proton 1	Lecture on charged particle energy loss, spreadsheet Bragg peak exercise	185 Phys
Proton 2	Expose sample at Crocker proton cyclotron.	185 Phys
Proton 3	Analyze Data	380 Phys
PMT 1	Introduction to PMT's. Measure dark noise	314 Phys
PMT 2	Measure PMT gain as a function of voltage	314 Phys
PMT 3	Measure efficiency of plastic scintillator paddle and then cosmic ray muon flux	314 Phys
ELEC 1	Design shaping circuits. Makes measurements	392 Phys
ELEC 2	Make digital measurements using an ADC and Field Programmable Gate Array	392 Phys

TA Color Code

Jeremy Mock	
Chris Grant	
James Morad	
Morgan Askins	
Sergey Uvarov	
Rich Ott	