EUROPEAN SPALLATION SOURCE

WG3 Overview
Accelerator Physics

Conveners:

Mamad Eshraqi (ESS)

Robert Zwaska (FNAL)

Tetsuro Sekiguchi (KEK/J-PARC)

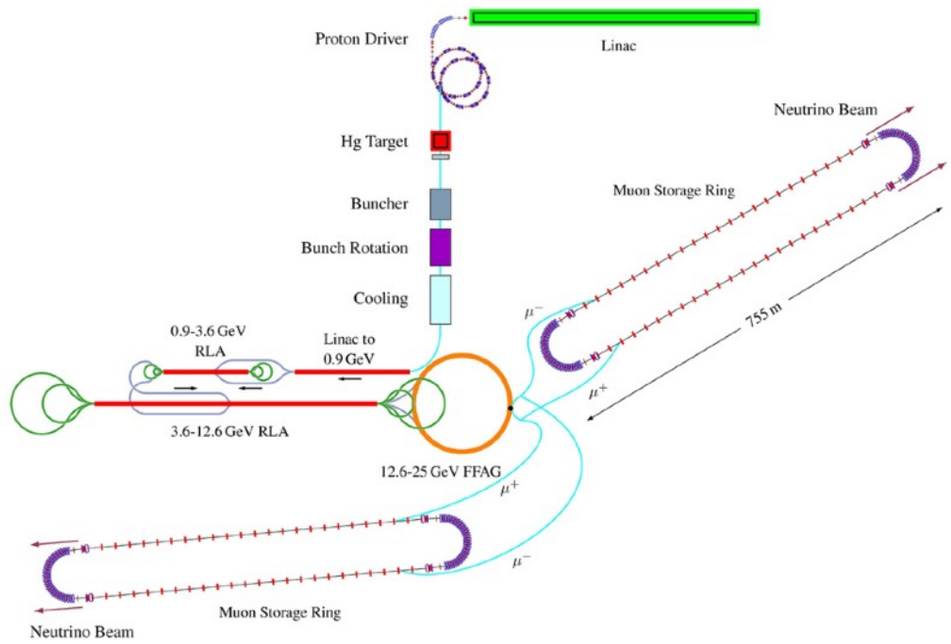
PROGRAM

- Topics covered:
  - High power proton beams
  - Target design and Irradiation
  - Neutrino sources
  - Muon sources, beams and cooling
  - Beam diagnostics for protons and muons

	Aug 26 (Mon)	Aug 27 (Tue)	Aug 28 (Wed)	Aug 29 (Thu)	Aug 30 (Fri)	Aug 31 (Sat)
09:00-10:30	Opening and Keynote	Plenary: Neutrino scattering	Plenary: Accelerator	Plenary: Muon	Plenary: Beyond PMNS	Plenary: WG summary
10:30-11:00	Break	Break	Break	Break	Break	Break
11:00-12:30	Plenary: WG overview	Plenary: Non-accelerator experiment	Plenary: Round table discussion	Parallel **p**	Plenary: Detector technology	Plenary: WG summary and closing
12:30-14:00	Lunch	Lunch	Excursion	Lunch	Lunch	
14:00-15:30	Plenary: Neutrino oscillation	Parallel **nu**		Parallel **BD**	Parallel **nu**	
15:30-16:00	Break	Break		Break	Break	
16:00-17:30	Plenary: Neutrino oscillation	Parallel **TI**		Parallel **mu**$^{+WG4}$	Parallel **mu**	
18:00-20:00	Welcome reception, poster session	SPC meeting	Workshop dinner			

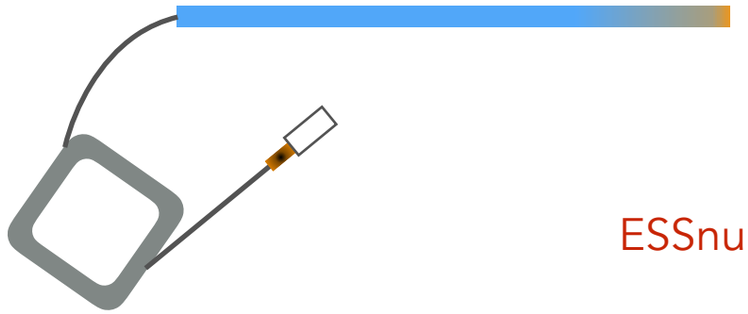
BEAMS OF NEUTRINOS

- Neutrino Factories, pure neutrino beams:
  - Generating muons from high energy primary beams
  - Cooling the muons
  - Accelerating the muons



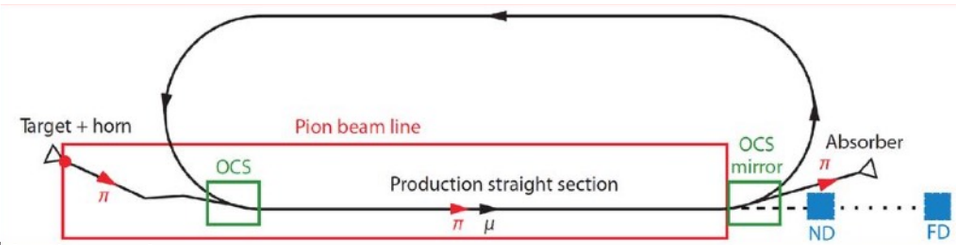
Muon Accelerator Program, FNAL

- Neutrino Super Beams
  - Generating pions from high energy primary beams



ESSnuSB

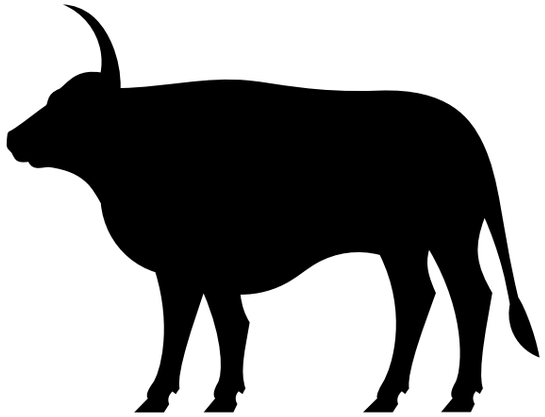
August 27 (14:00-14:30, 15:00-15:30)
J-PARC Neutrino Beamline and 1.3 MW Upgrade, Yuichi Oyama
Neutrino Source for Sterile Neutrino Searches, Tomoyuki Konno
August 30 (14:00-14:30, 15:00-15:30)
NuMI Neutrino Beam Operations and Megawatt Upgrade, Yun He
Design of nuSTORM facility for a potential implementation at CERN, Jaroslaw Pasternak

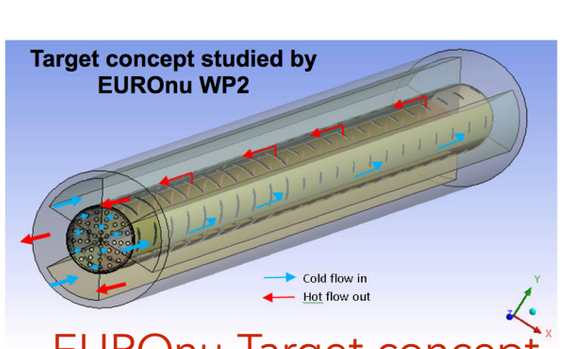


nuSTORM

HORN AND TARGET

- High power target:
  - Thermomechanical
  - Lifetime
  - Radiation damage
- Horn:
  - Efficient focusing and separation of species
  - Thermomechanical
  - Vibrations
  - High current needed





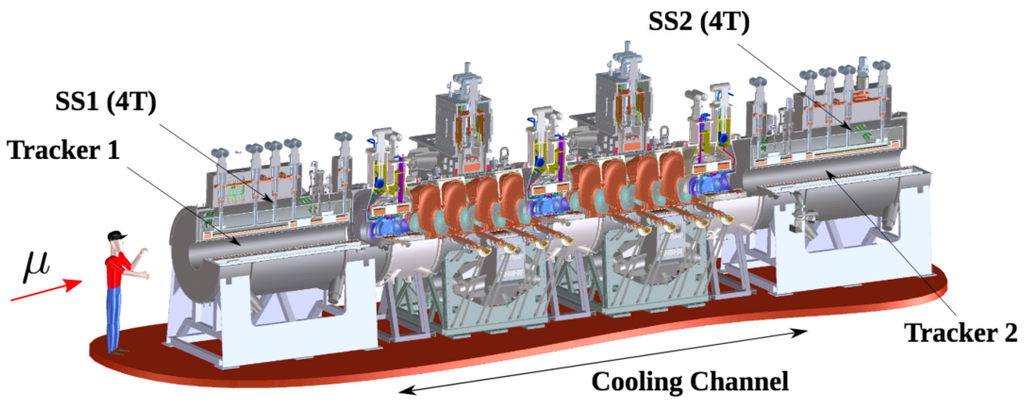
EUROnu Target concept

Horn3, J-PARC

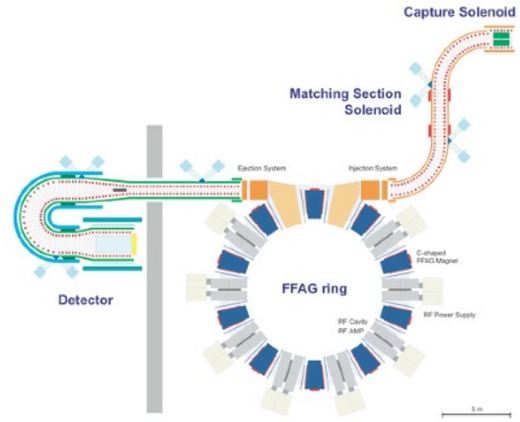
August 27 (16-17:30)
Design Studies of the LBNF/DUNE Target, Chris Densham
Radiation Damage Experiments (RaDIATE), David Senor
HiRadMat and High Power Targetry, Claudio Torregrosa Martin
August 29 (12:00-12:30)
The Design Study of the Target Station for the ESS Neutrino Super Beam Project, Loris D'Alessi
August 29 (16:00-16:25, 17:40-18:05) +WG4
Status and Future Prospect of Muon Target at J-PARC, Shunsuke Makimura
Design and Development of a Tungsten Pion Production Target for the Mu2e Experiment, Chris Densham

MUON SOURCES; *PROBABLY THE BEST*

- On top of above mentioned challenges, they have their own!
  - A different kind of cooling
    - Fast
    - Low loss
    - Efficient
  - Modeling of Muon interaction with matter is not as well documented as that of stable(r) particles

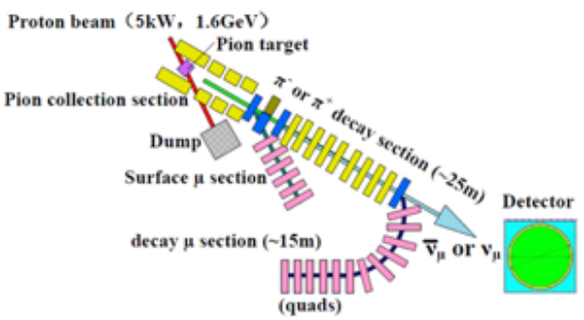


MICE, RAL



MuSIC, Osaka Uni.

August 29 (16:00-**16:25-17:40**-18:05**) +WG4**
Mu2E Muon Beam Optimization, Helenka Casler
MuCool, Ryoto Iwai
MuSIC, Akira Sato
August 30 (14:30-15:00, 16:00-18:00)
Updated Design Studies at 25 kW for EMuS at CSNS, Nikos Vassilopoulos
Progress on Muon Ionization Cooling Demonstration with MICE, Moses Chung
Measurement from MICE of Coulomb Multiple Scattering and Energy Loss, John Nugent
Transverse/Longitudinal Emittance Exchange in MICE, Alan Bross

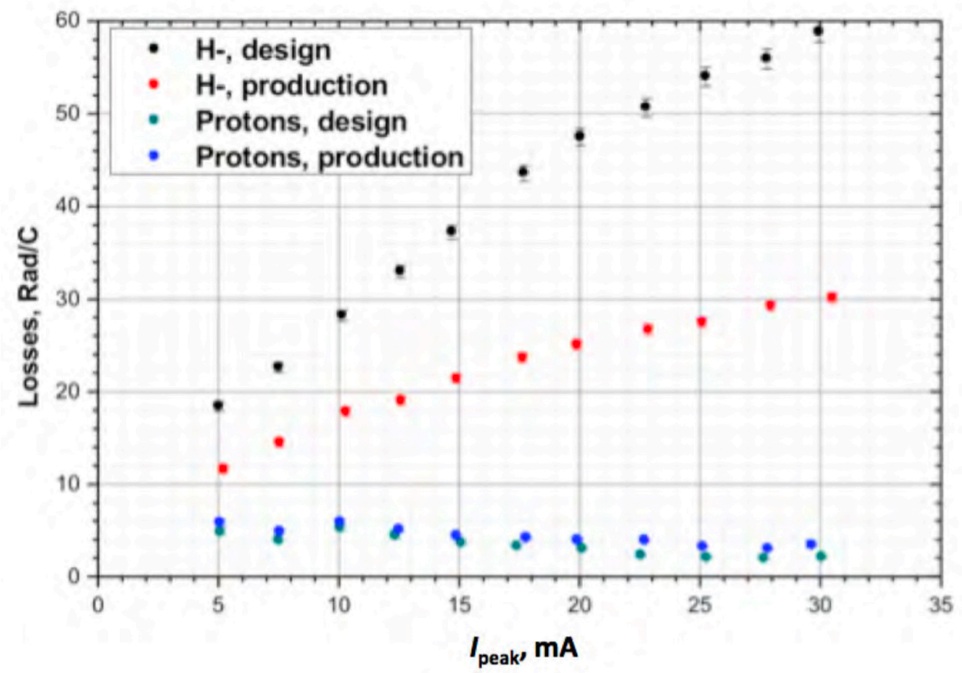


EMuS, IHEP

Accumulators and Linear Accelerators

- Accumulators and synchrotrons:
  - Injection problems
  - Strong space charge, tune shift and losses

- Linear accelerator front end:
  - Efficient acceleration
  - Losses (specific to H^-)
    - Intra beam stripping
    - Lorentz Stripping
    - Gas and blackbody radiation

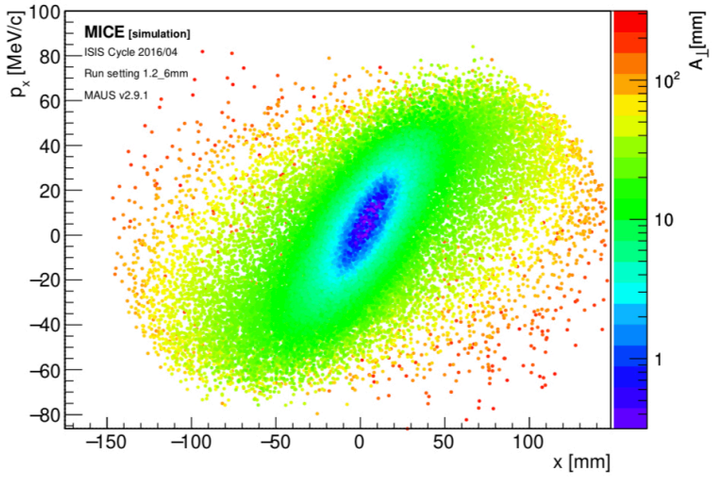


H- Intrabeam stripping experiment at SNS

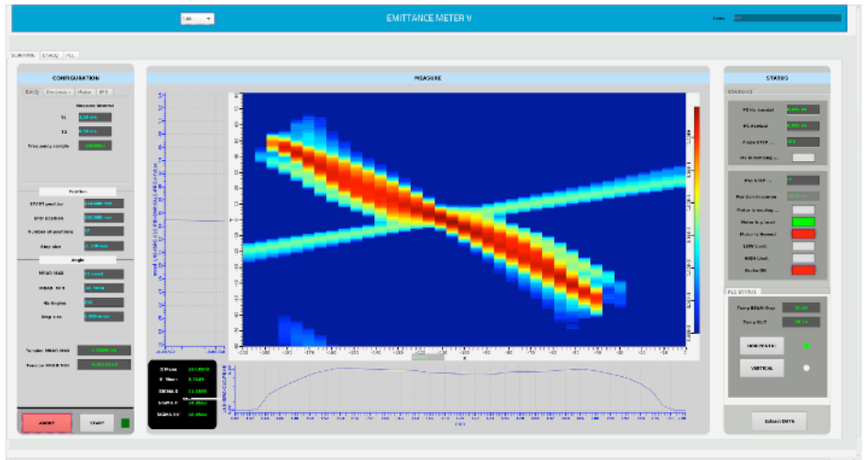
August 27 (14:30-15:00)
Novel Approaches to High-Power Proton Beams, Jeffrey Eldred
August 29 (11:00-12:00)
ESSnuSB Linac Design and Beam Dynamics, Ben Folsom
The ESSnuSB Accumulator Beam Dynamics Design, Ye Zou

Beam Diagnostics

- Interceptive devices
  - Survival in high beam intensities
- Non-interceptive devices
  - Accuracy and precision of measurement
- Lifetime and reliability



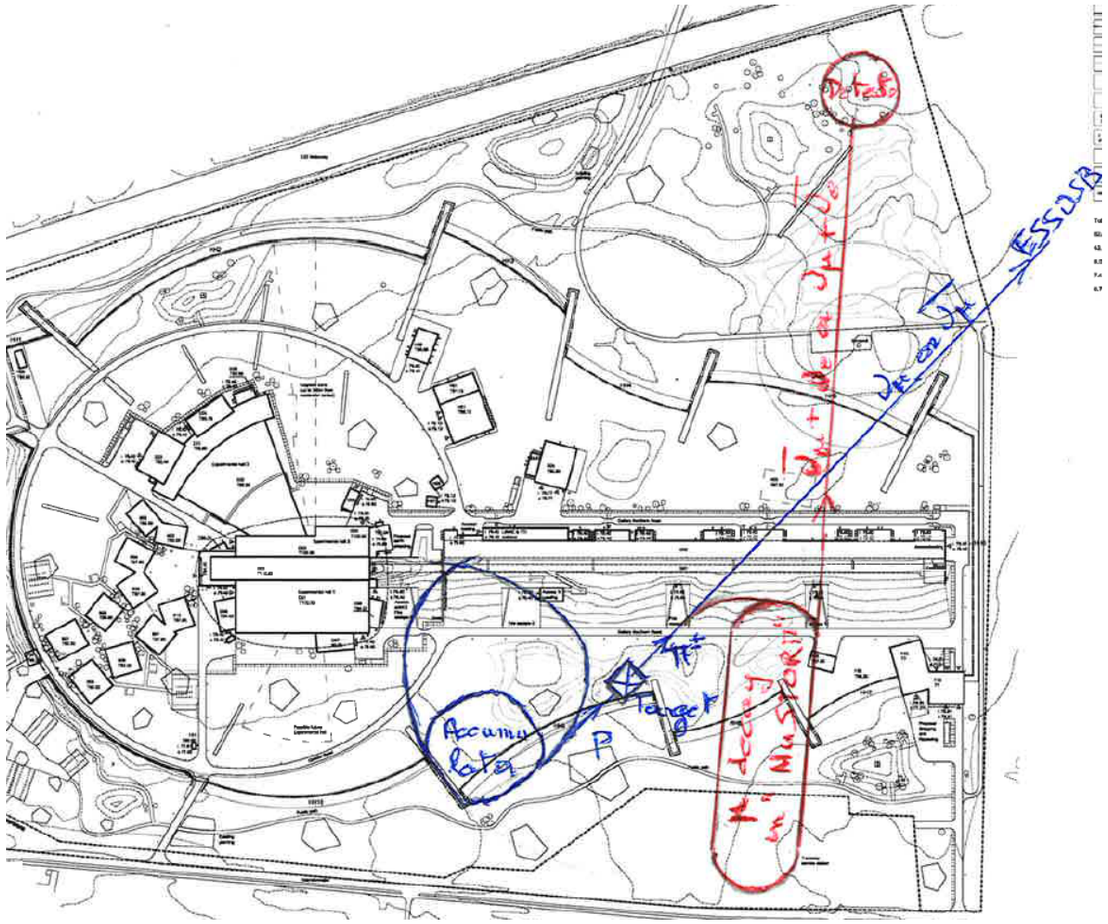
MICE, RAL

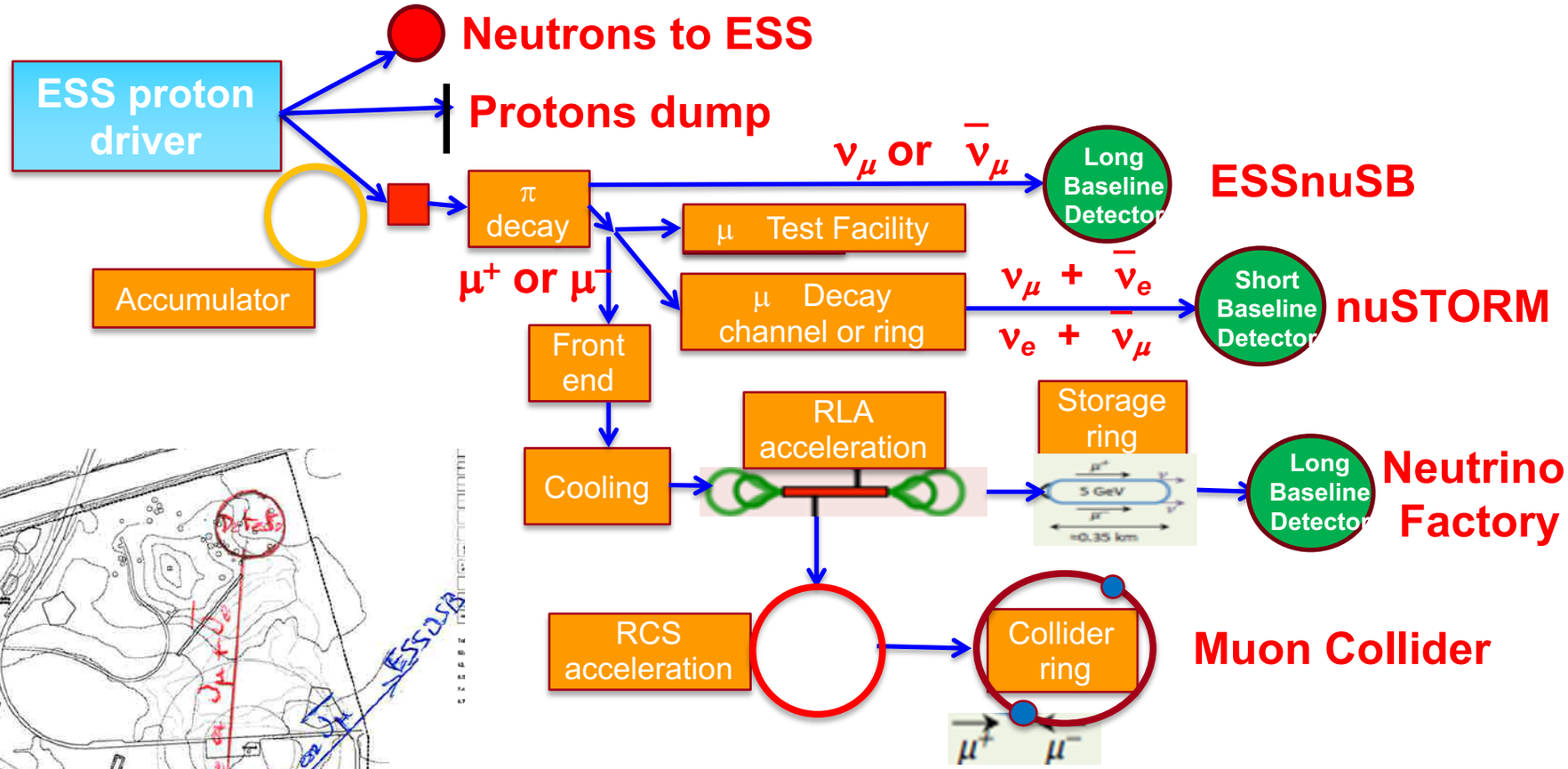


Emittance measurement, ESS

August 29 (14:00-15:30)
Development of New Proton Beam Monitors for J-PARC 1.3 MW Upgrade, Megan Friend
Novel RF Hadron Beam Monitor, Rolland Johnson
Development of New Muon Monitors for J-PARC Neutrino Experiment, Kenji Yasutome

TOWARDS NUFACT(ORIES)





EUROPEAN SPALLATION SOURCE

Enjoy a Lively NuFACT 2019