Muon beam study in China

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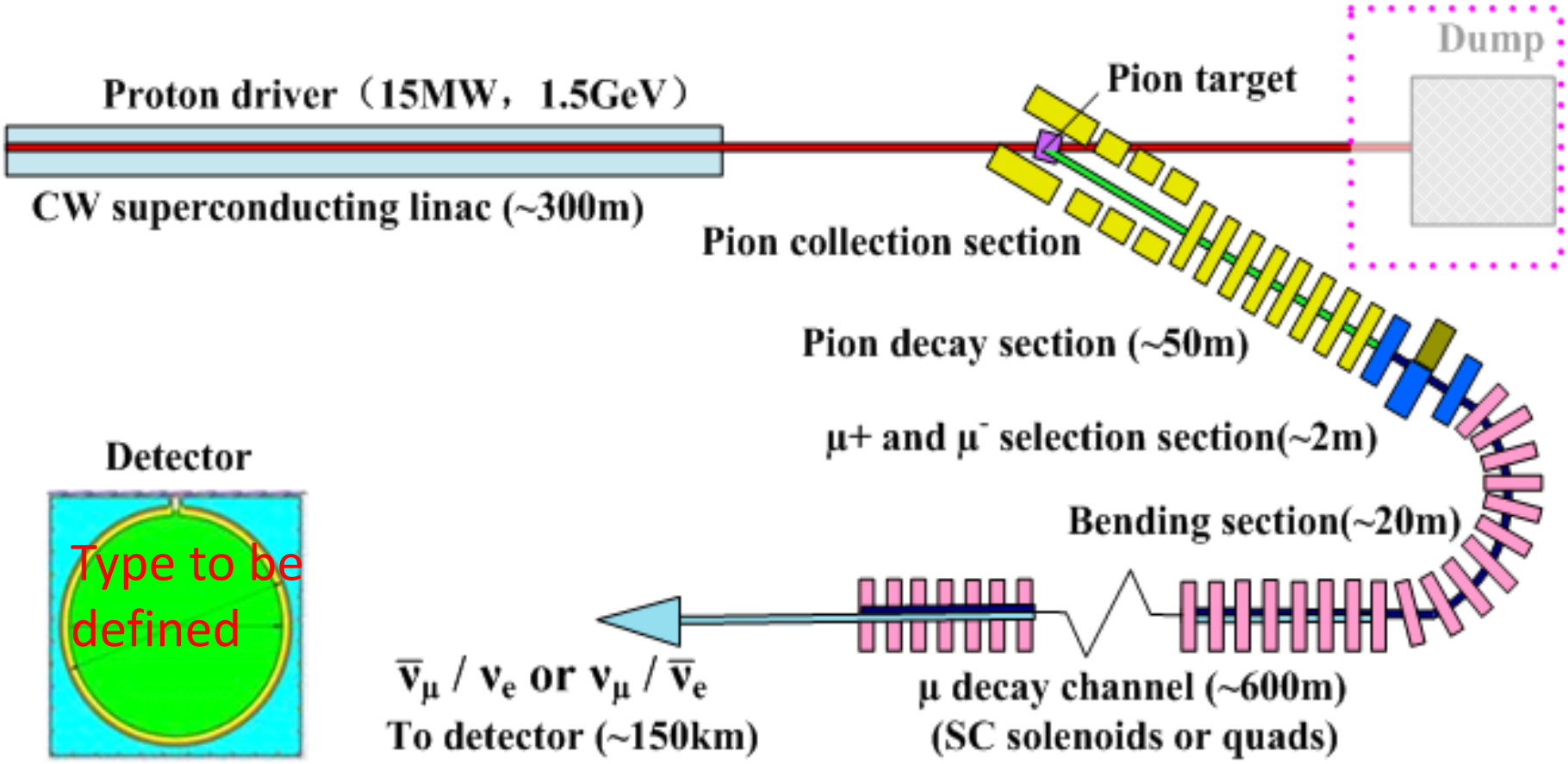
Main Topics

- MOMENT for neutrino oscillation experiment
- EMuS for MOMENT R&D and muSR applications
- Other activities on muon beam

MOMENT study

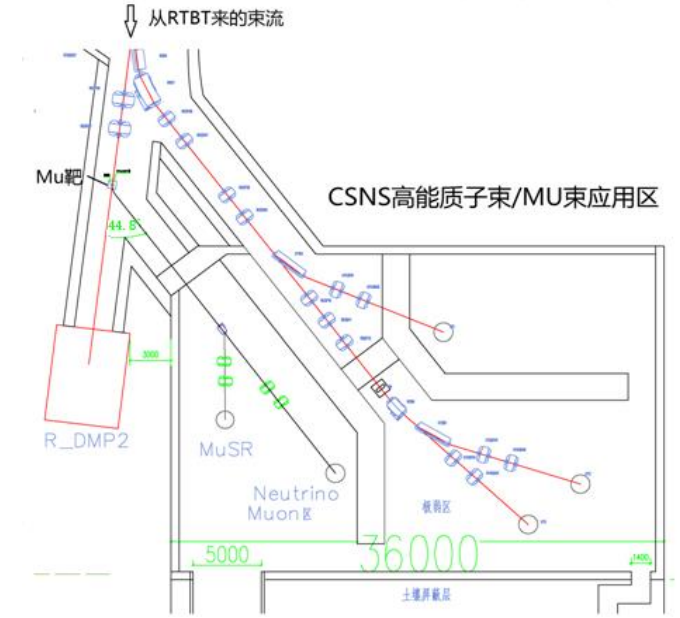
- MOMENT: A muon-decay medium baseline neutrino beam facility
- MOMENT was launched in 2013 as the third phase of neutrino experiments in China, following Daya Bay and JUNO
  - A dedicated machine to measure CP phase in the future, if other experiments (such as LBNF/DUNE, HyperK) will have not completed the task
- As a driving force to attract researchers from China as well international collaborators to work on neutrino experiments based on accelerators

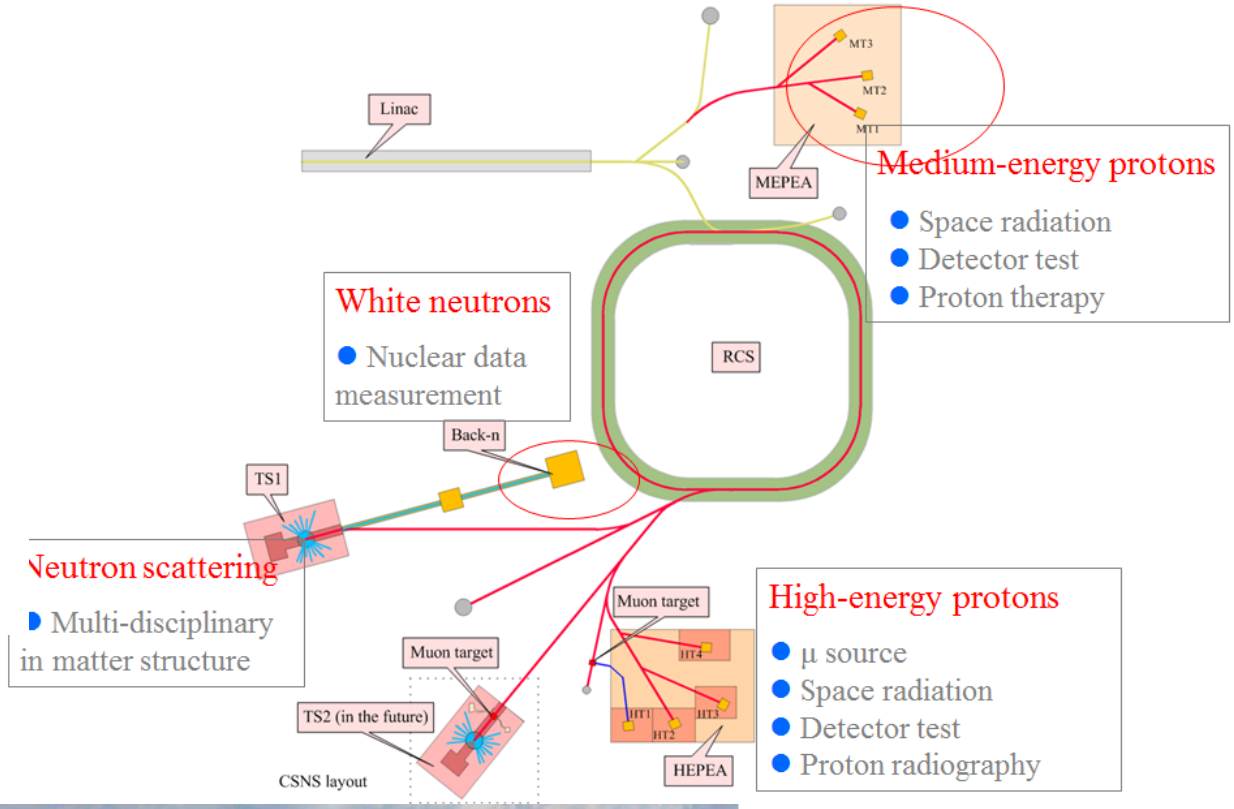
Schematic for MOMENT



EMuS at CSNS

- We are studying an experimental muon source (EMuS) at China Spallation Neutron Source (CSNS).
  - CSNS is under construction, expected to complete in March 2018, 100 kW at Phase I and 500 kW at Phase II
  - EMuS will use 4% beam power to produce intense muon beam for MOMENT R&D studies and μSR multidisciplinary applications.
  - MOMENT R&D studies include muon capture in high-field, charge selection etc; potentially it may be used for neutrino cross-section measurements.
  - EMuS study is supported a fund from NSFC for R&D and prototypes


从RTBT来的束流
Mu靶
CSNS高能质子束/MU束应用区
44.8°
R_DMP2
MuSR
Neutrino
Muon区
5000
36000


Linac
MT3
MT2
MT1
MEPEA
Medium-energy protons
Space radiation
Detector test
Proton therapy
White neutrons
Nuclear data measurement
RCS
Back-n
TS1
Neutron scattering
Multi-disciplinary in matter structure
Muon target
TS2 (in the future)
CSNS layout
Muon target
HT4
HT3
HT1
HT2
HEPEA
High-energy protons
μ source
Space radiation
Detector test
Proton radiography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platforms

Other activities on muon beam

- IHEP and Sichuan University are members of the MICE collaboration
- At IHEP, a small group is collaborating on the COMET project

Thank you for attention!