

Muon Collider R&D – Potential US Engagement

Design Study Engagement (\$)

- MAP Designs are the foundation for the IMCC Effort
 - Support US Engagement with each of the sub-system designs
 - Effective knowledge transfer to enable rapid progress
 - Incorporate final R&D and design results from the US program
- Next generation MDI at higher energies and interface to detector/physics teams
- End-to-end simulation incorporating muon multi-physics elements
- Ensure our ability to explore US siting options

Technology Development Engagement (\$\$)

- Magnet Technology
 - Collider Ring – High Field Magnets
 - Accelerator Rings – Fast Ramping Magnets O(1kT/s)
 - Cooling Channel
 - Solenoids for 6D cooling
 - Very high field solenoids for final cooling
 - Target Solenoid
- RF
 - Cooling Channel
 - NCRF in magnetic fields
 - Explore cold copper technology for 6D modules
 - SCRF for acceleration chain
 - Need for Test Stands

Test Facility/Demonstrator Engagement (\$\$\$)

- 6D Cooling Demonstrator
 - Fully engineered cooling module
 - RF prototypes
 - Magnet prototypes
 - Integrated cooling module demonstrator
 - With protons \Rightarrow Intensity
 - With muons \Rightarrow Cooling
 - Requires intermediate Muon Source (e.g., nuSTORM type)
- Fast ramping magnets and power converters for acceleration chain
- Leverage facilities to demonstrate:
 - Radiation and shock resistance of targets and SC coils
 - High gradient SCRF
 - High-field dipoles

Unique Cross-cuts

- C³ cold copper cavities for cooling
- FCC high-field dipole development
- Others?

