Goals of the Muon Collider Physics Working Group

What benchmark scenarios can we come up for representative studies?

- SM (WW, $t\bar{t}$, s-channel Higgs, HZ, ...?)

- New particles (SUSY, ED, Z', strong dynamics, ...?)

What are the most important capabilities needed from the muon collider/detector?

- High cms energy ($\sqrt{s} \gtrsim 1$, 3, 5 TeV ?)

- High luminosity ($\mathcal{L} \gtrsim 100$, 500, 2000 fb^{-1} ?)

- Particle detection and ID at high rapidity (how high?)

- Low energy particle ID (e.g. for leptons)

- Precise measurement of missing energy (hermiticity of detector)

- ...

Cooperation with Detector/Machine Groups

➡ Physics goals affect design of detector, machine, and MDI interface:

- Energy vs. luminosity vs. beamstrahlung

- What size of blind cone can we accept?

- Prefer larger blind cone if it reduces machine backgrounds?

- Need vertexing near IP?

- Detector precision optimized for electrons/photons, muons, jets, …?

- …

⬅ Engineering realities pose challenges to physics goals:

- What can we do with limited energy/luminosity?

- How are physics benchmark processes affected by machine bkgd.?

- How do results depend on blind cone?

- …

Let's go!