LoI for Snowmass 2021. Deadline: end of August

1. LoI two pages. It should be an indication of a topic one would like to work on （should be **deliverable**）. Snowmass conveners will use these as a way of assessing the landscape of ideas.
2. After submitting the LoI, subsequent work should lead to a set of results. These can be publishable papers. It will also be contribution to the Snowmass. Such contribution due end of July 2021.

Possible topics

1. Higgs properties

Interference effect in higgs coupling measurement.

Refined predictions.

Differential observables.

Higgs Self Couplings.

Key requirement on Tracker & VTX (Flavor Tagging).

1. Electroweak precision

Systematics study: focusing on one or two

WW process

TGC (remark: Jet can be measured to energy resolution of 4%, direction resolution of 1%)

Afb(b) – sin^2(theta\_W) (remark: Jet Charge Measurement)

1. Flavor

Rare B decay channel study, e.g. b->sll, b->c l nu and so on

Z and Higgs flavor violating decay

Physics Object at Jet and corresponding Benchmarks:

 Tau in the Jet: Bc->Tauv

 Lepton in the Jet: B/C meson Leptonic decay

 Pi-0: Z->tautau, Br(tau->X)

 MET at Jet: leptonic decay of Heavy Flavor Mesons, Bs->Phi+vv

…

1. Precision calculation

Corrections to Zh, and other EW observables, ttbar. Not full calculation. Is there a doable (on a year scale) project here?

1. QCD

Alpha\_s projection (c.f. FCC-ee).

Gluon/quark differentiation

Other event shape

Quarkonium physics?

Exclusive hadronic Z decays: test of QCD factorization for exclusive decays with tiny power corrections, which are large and difficult to calculate in B meson decays

1. New physics

Z rare decay: detailed study for a couple of channels.

Long lived particles

CP violation measurement

SUSY Model: i.e., Stau search, gaugino search

 Dark matter search with ISR photon

 Probe new physics Higgs invisible decay

1. Machine learning.

e.g. <https://arxiv.org/abs/2004.15013>

1. ttbar

CEPC EFT fit. Different run scenarios

 9. Global interpretation