# FCC-ee polarization & energy calibration

A. Blondel, J. Wenninger

# Aim of the working group

- Some work on transverse polarization (E. Gianfelice-Wendt) and energy calibration (M. Koratzinos, I. Koop, M. Muchnoi) was already done in the past year(s) for FCC-ee.
- In the meantime we now have a baseline layout & lattice (K. Oide) that fulfils the requirements of DA for an ideal machine. This lattice should be used by and improved for polarization & energy calibration
- Aim of this working group is to steer a coherent effort in order to fill gaps in view of writing up the CDR in 2018/19.
- We have a proposal for topics/work packages that could be shared among the various actors according to their experience etc.

# Topics / work packages

| Subject | Item | Possible actors |
|---|---|---|
| **Polarization** | Polarization with errors & versus Energy on KO lattice | E. Gianfelice-Wendt |
| | Impact of experimental solenoids & compensation | E. Gianfelice-Wendt |
| | Wiggler schema | M. Koratzinos |
| | Harmonic compensation & compatibility with emittance ratio | E. Gianfelice-Wendt |
| | Orbit correction strategy → dispersion free steering | |
| | Machine tune impact (Qx/Qy/Qs) - collision versus pol tunes | E. Gianfelice-Wendt |
| | | |
| **Polarimeter** | Layout, specs, detector & laser concept | N. Muchnoi, I. Koop |
| | Integration of polarimeter into lattice | K. Oide |
| | | |
| **Beam energy** | Depolarization accuracy & systematics | I. Koop |
| | Systematic erros on nu = a gamma | E. Gianfelice-Wendt, M. Koratzinos |
| | Magnetic field model tracking | |
| | Impact of radial errors | J. Wenninger |
| | Alternative energy measurement (long. pol) | I. Koop |
| | | |
| **CM energy** | Model of RF system & Eloss with errors --> local energy | M. Hildreth, CERN fellow, M. Koratzinos |
| | RF error (phase, V, alignment) study | CERN RF group |
| | Measurements to constrain local energy model (sawtooth etc) | CERN fellow, J. Wenninger |
| | | |
| **Energy spread** | Requirements on energy spread / profile | A. Blondel |
| | Energy spread (bunch length) measurements | CERN BI |
| | Bias from beamstrahlung | |
| | | |
| **Systems** | Wiggler design | A. Milanese (CERN magnet group) |
| | Logging | |