HEL magnetic system

HEL design ('old' gun and collector)

main solenoid

bending solenoid
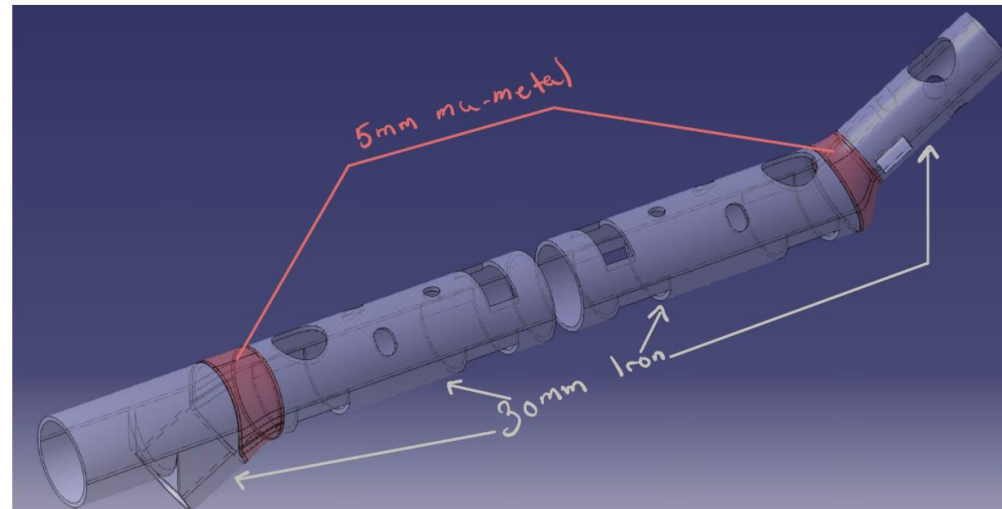
collector

e-gun
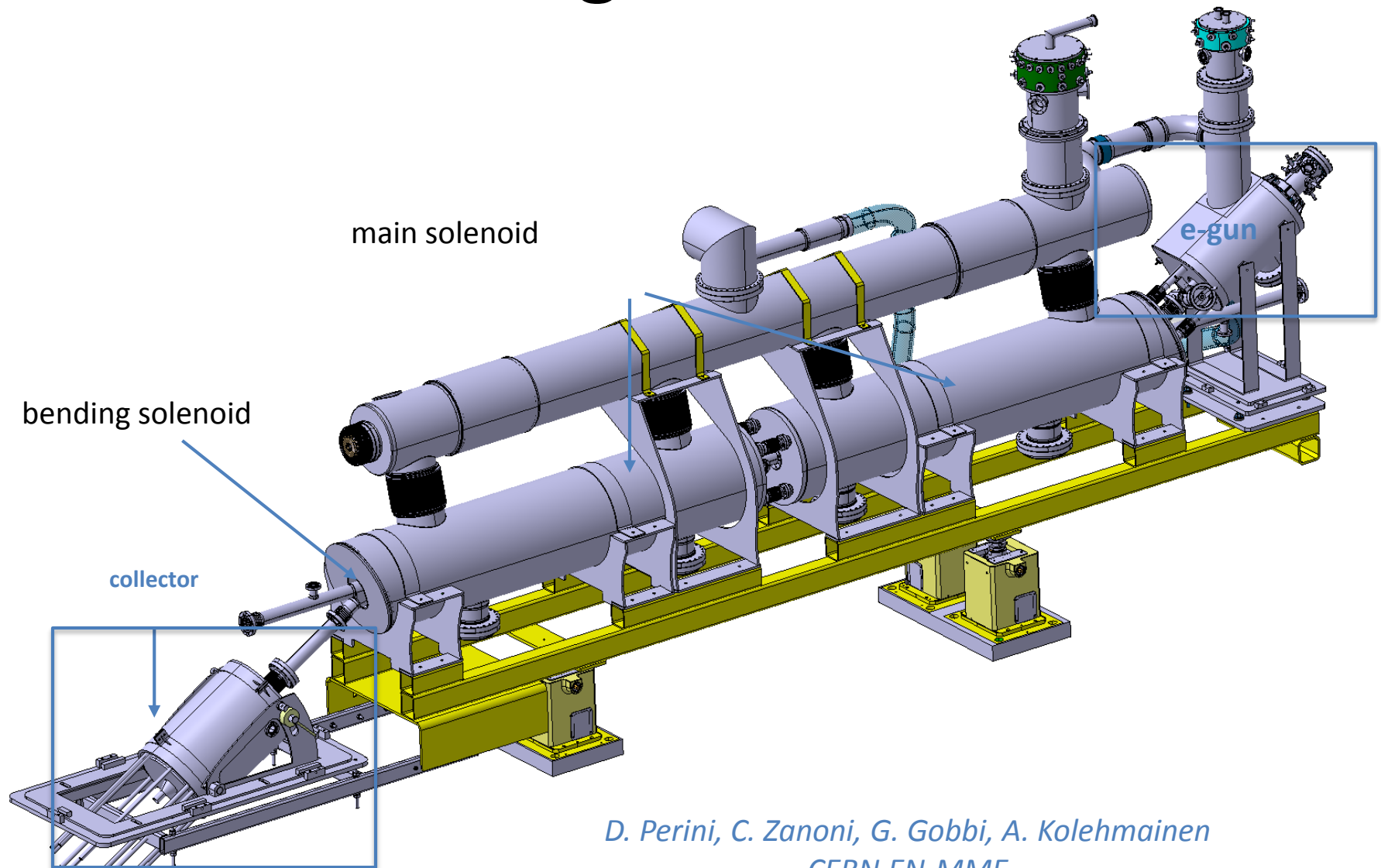
D. Perini, C. Zanoni, G. Gobbi, A. Kolehmainen
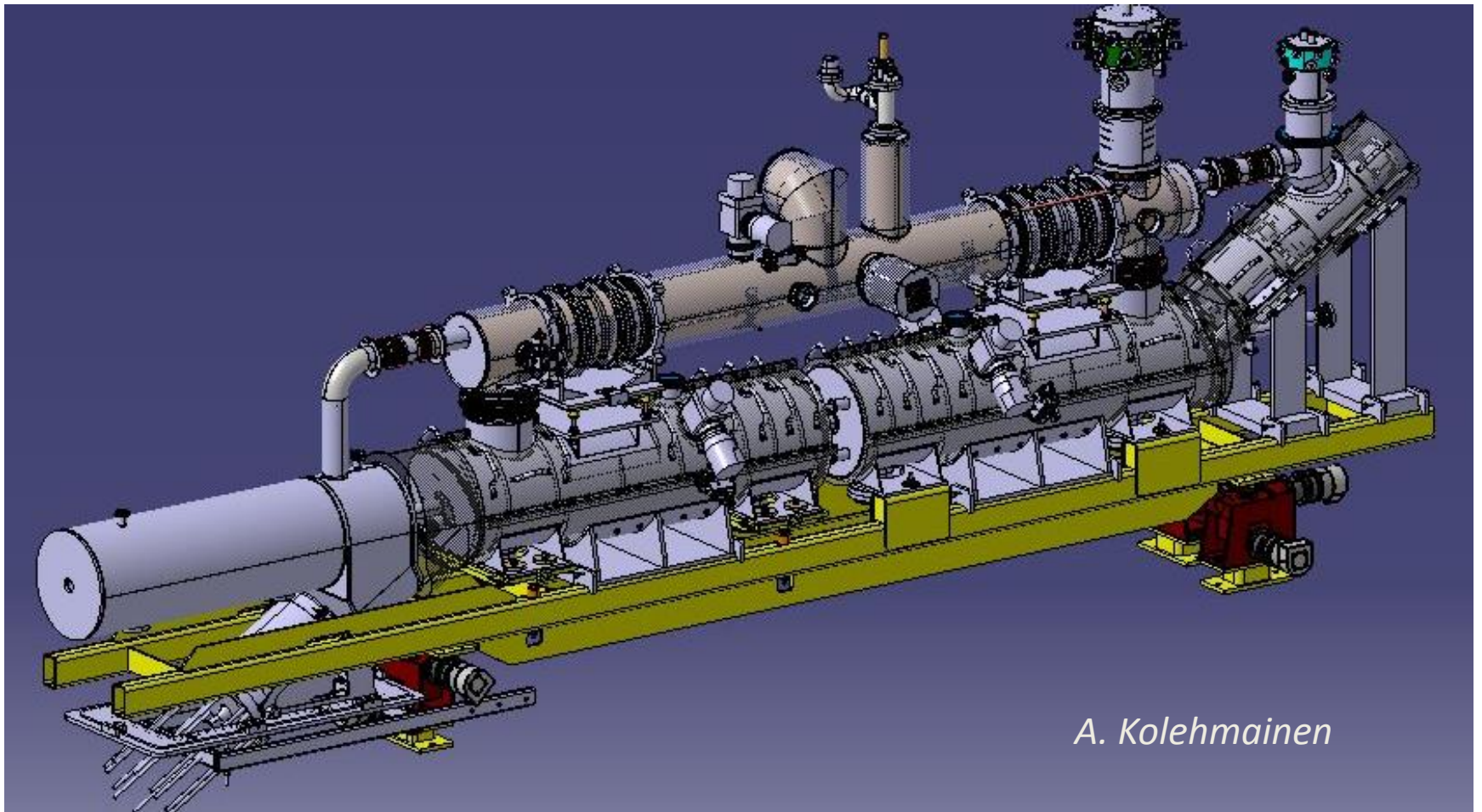*CERN EN-MME*

Current magnetic system design
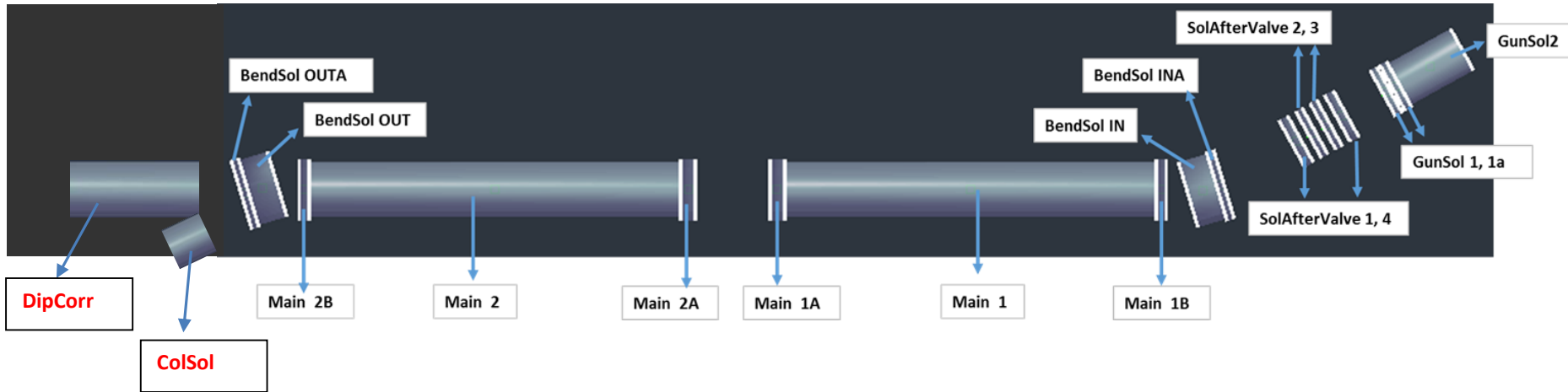
- 2 Gun solenoids
- Addition of
  - Collector solenoid
  - Dipole Corrector
  - Iron shield

Full assembly with iron shield and corrector dipole

A. Kolehmainen

Ongoing simulation work for HEL

Ondrej: Offer an alternative/cross check CST

- WARP simulations
  - Injection arm up to the main solenoid
  - Warped bend to speed up simulations with smaller simulated volume

Ana: In order to check systematics and spread in CST simulations

- Find largest possible mesh size for magnetic calculations
  - with iron shielding will be VERY slow)
- Find largest possible mesh size for particle tracking

Future work

CST: Using 'optimised' mesh sizes

- Calculate (with iron shielding) particle trajectory and correctors necessary to obtain smooth injection
- Estimate correctors necessary for 'realistic' model (misalignments or LHC beam off orbit) and e-beam trajectory at main gap
- Work out collector side (solenoid needed and collector design)

WARP:

- Validate CST particle and energy distribution maps for calculations of HEL effect on LHC beam