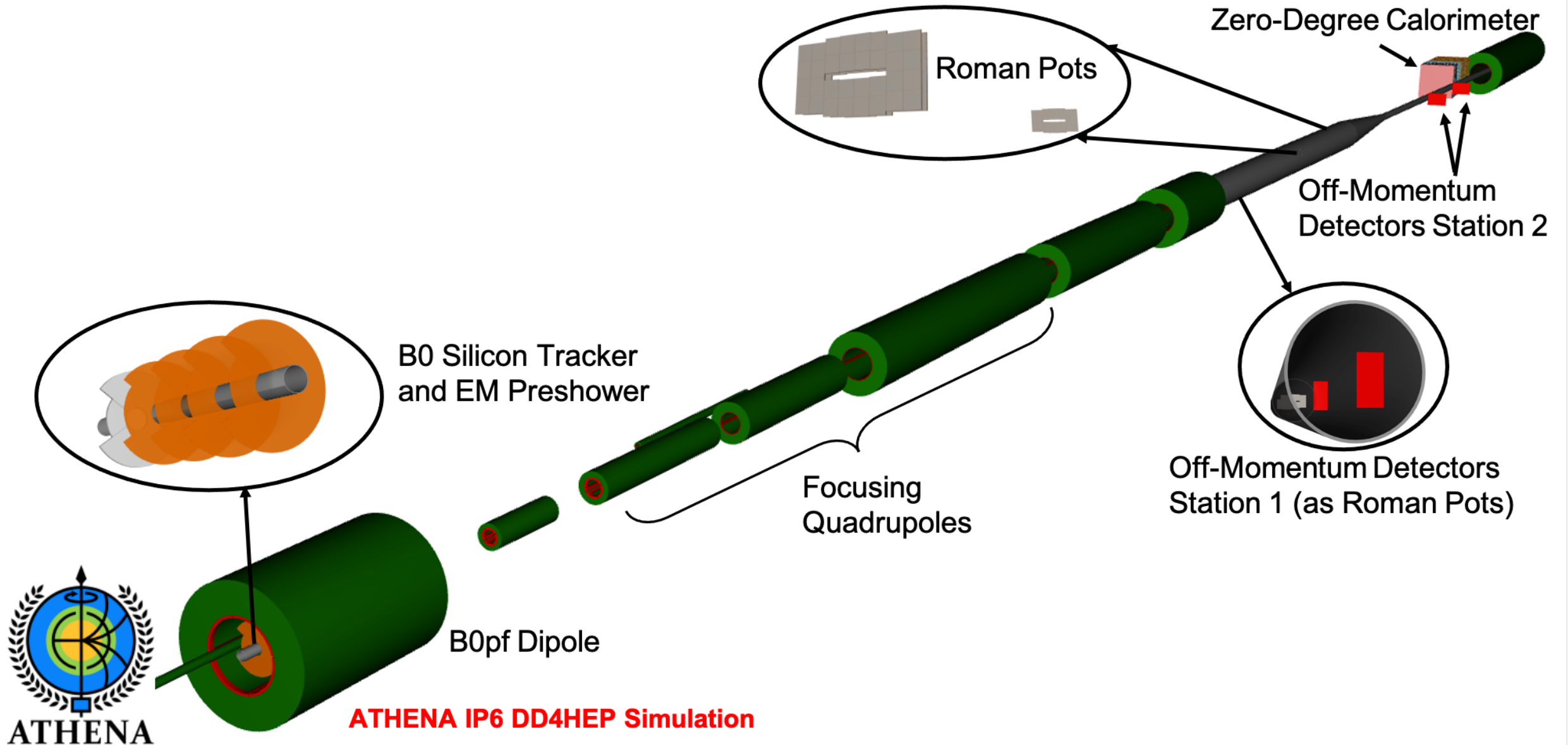# Changes to the current baseline FF configuration in ATHENA

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Current Baseline

Zero-Degree Calorimeter

Roman Pots

Off-Momentum
Detectors Station 2

B0 Silicon Tracker
and EM Preshower

Focusing
Quadrupoles

Off-Momentum Detectors
Station 1 (as Roman Pots)

B0pf Dipole

ATHENA IP6 DD4HEP Simulation

ATHENA

Basic Detector Assumptions

- Roman Pots
  - Same basic ideas presented in YR, but updated based on eRD24 strawman layout.
  - Now includes the RF shielding layers, and additional material assumptions for ASICS, cooling, etc. (YR was only the silicon).
  - More realistic layout will reduce the low-pT acceptance since we cannot perfectly surround the beam's elliptical shape.

- Off-Momentum Detectors
  - Same assumptions as for YR for overall acceptance, but beampipe inclusion necessitates a two station design – one as RP after b1apf, one down near B2pf (opposite ZDC).
  - YR acceptances should be preserved, this design provides better coverage and overlap with the RP.

- ZDC
  - Same placement/size as YR – just the more realistic ALICE FoCal design.

- B0 detector
  - Four silicon tracking layers, followed by silicon pre-shower with two radiation lengths of Pb converter.
  - Working with the project on the support structure needed to hold, remove/insert, and maintain the detector system.

No assumptions are drastically different from the YR assumptions. The YR configurations was already fairly advanced.

What may change

- The B0 preshower/EMCAL detector.
    - There has been little input on a possible concept for this component.
    - I am assuming a bare-bones pre-shower with two radiation length of Pb, and a silicon layer for tagging the produced e+e- pair.
    - Not clear what else could really fit there.
- Very minor re-centering of the Roman Pots to account for the 50cm shift.
    - I have already done this in EicRoot to align with the central beam – just need to update the numbers in DD4HEP (actually just marked the branch ready to merge a little while ago).
- Addition of additional material layers in the OMD (e.g. shielding foils for first station).
- Everything else is well-setup by this point, it's just a matter of testing that the components read-out properly to produce acceptance plots, and then adding in the the relevant reco code (transfer matrices) for the RP/OMD, and checking the resolution of the ZDC.
    - Honestly not sure exactly what to do here, but I will be attending the software office hours over the next week or so to try and get the questions answered.