Energy deposition update

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Front End phone meeting

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MARS

- Modified the old chicane deck to work with the new MARS version
  - m1512.f => m1514.f
- No ROOT or other special geometry required, baseline extended geometry will work
- Main concern: channel length
  - may need to simulate by sections (buncher/rotator/cooler)

Input

- ICOOL deck from David Neuffer
- Start 10 m downstream of the target
  - C target 6.75 GeV protons by Xiaoping Ding
  - Is there a MARS file @ 10 m? I can use it directly
- Not going to use the chicane in any form
  - unless there is a desire to run the chicane final distribution through the rest of the front end
    - this will still be a separate simulation
- Buncher: 21 m (at 17 atm)
- Phase rotator: 24 m (at 34 atm)
- Matcher: 3 m (no gas, should I change that?)
- Cooler: 112.5 m (150 cells, no gas)

Magnetic field

- Straightforward in drift/buncher/rotator: 2 T uniform field, easy to implement in MARS

- Matcher/cooler: there is a list of coil sheets provided with the ICOOL deck
  - I can use those to generate field maps
  - Some minimal transformation is required for import into MARS
  - are there field maps readily available?

RF cavities

- 325 MHz, 25 cm
  - except the first cavity that is 50 cm long
- Modeled in MARS using simple pillbox geometry
  - unless a different geometry is strongly desired
- Energy change is via RF kick at the center of the cavity
  - MARS invokes user-defined routine whenever the center plane is crossed
- Documentation is limited, have some examples handy
- Phasing information from the RF diagnostic file
  - can be trusted?

Geometry challenge

- What are the layers (material, thickness, specific properties) comprising the cavity wall
  - no such information in ICOOL/G4beamline
- How thick the beampipe and shielding around (if any) should be
  - energy deposition study, not shielding study
- What else is in the channel, other than RF, coils, solid absorbers (15 mm LiH around RF)
  - any windows, structures around coils