IFR detector optimization

- Parameters to optimize
    - Number of active layers
    - Amount of absorber
    - Width of the scintillator bars
    - Evaluate the worst allowed time resolution

- Quantities to evaluate: muon ID, pion rejection, detection efficiency.

- What would be needed: a full superB simulation + reconstruction code and tools.

- The plan is to generate single particle events (muons, pions and then also KI) and events + background with Bruno and then write some reconstruction and what's needed to optimize the detector.

To do

- Write the GDML description of the IFR: 2 configurations already done

- Write digitization code:
  - partially done, but inside Bruno; we will run it on the rootuples.
  - need to add the segmentation of the scintillator bars.

- Write a track fitter and extract relevant information.

- Write a cut-based muon selector similar to the first one used in BaBar.

- Test different configurations (BaBar like, CDR like, some hybrid).

- Make a proposal

Time scale

- The IFR group has a tight time constraint: need to place the order for scintillators and iron for the prototype before the end of the summer.

- In any case the IFR optimization does not affect the other subdetectors: the inner dimensions are fixed.

- Nobody working full time on this: we plan to have some machinery ready and start analyzing the rootuples by the Perugia meeting (no significant results expected by that time).

- Code developments for the Fast Simulation will continue in parallel and will eventually take advantage of the optimization results.