

Requirements for the Simulation Effort

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What to Talk About Here

- What needs to be done
- What are the code capabilities, and what needs to be developed
- Who is doing what (assign tasks?)

What Needs to be Done Magnet Representation

- Initially: have a full 3-D model with adjustable parameters
 - ◆ End field shape
 - ◆ Additional multipoles
 - ◆ How will someone supply us this information
- Use of full 3-D field map
 - ◆ Will we need to extrapolate from their data using Maxwell's equations?
- Some method of superposition of magnets
 - ◆ Check of whether magnet-undrift-magnet is acceptable
 - ◆ Does linearity hold (i.e., can we just add the fields from individual magnets?)

What Needs to be Done Moving Magnets

- Need to check full range of errors
 - ◆ Displacements, all directions
 - ◆ Rotations, all directions
 - ◆ Field errors
- We will intentionally introduce errors
 - ◆ Displacements
 - ◆ Field errors
 - ◆ Need to simulate the effects of these

What Needs to be Done Non-Ideal RF

- Early: check every third cell with RF vs. every second cell; is there a measurable effect?
- Errors, intentional and not
 - ◆ RF phase
 - ◆ RF voltage
- Include effect of transverse dependence of RF field

What Needs to be Done Diagnostic Hardware



- Need to do something to estimate what we will actually measure

What Needs to be Done Collective



- Beam loading
- Higher order modes
- Can probably ignore other stuff (check?)

What Needs to be Done Operational

- Need to prepare a sequence of scenarios, and a sequence of operations within each scenario.
 - ◆ Scenario setup (how to set machine parameters)
 - ◆ Scenario commissioning process (verifying we have it right)
 - ◆ Main run

Assessing Our Capabilities

- What are the time scales?
- What information do we need before the hardware is made?
- Who do we have working on this?
 - ◆ How much time do they have to devote to this?
 - ◆ What are their capabilities?
- Where are we missing capabilities, and what do we need to develop?