Numerical study of lattice modifications from engineering constraints for a NF

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Motivation

• Engineering studies require an “empty cell” after a certain number of cavities in the cooler
• So far the empty cell was placed after 5 cavities
• At the last IDS it was proposed to increase this number to 7
• Here I will show you the results of this simulation
• Discuss the outline of our proposed PRST-AB paper
New cooler design
Simulation Results (1)
Simulation Results (2)

![Graph showing simulation results with different group sizes.](image)
Main focus of the paper is the cooler section
- We have a number of novel ideas
- They have applications for a NF or MC design
- But also are useful for designing systems for nuclear detection

Compare alternative cooling systems:
- New baseline with engineering constraints (All)
- Magnetic Shielded Lattice (Rogers)
- Bucked Coils (Alekou, Pasternak, Stratakis)

Benchmark lattices with two codes (G4BL and ICOOL)