

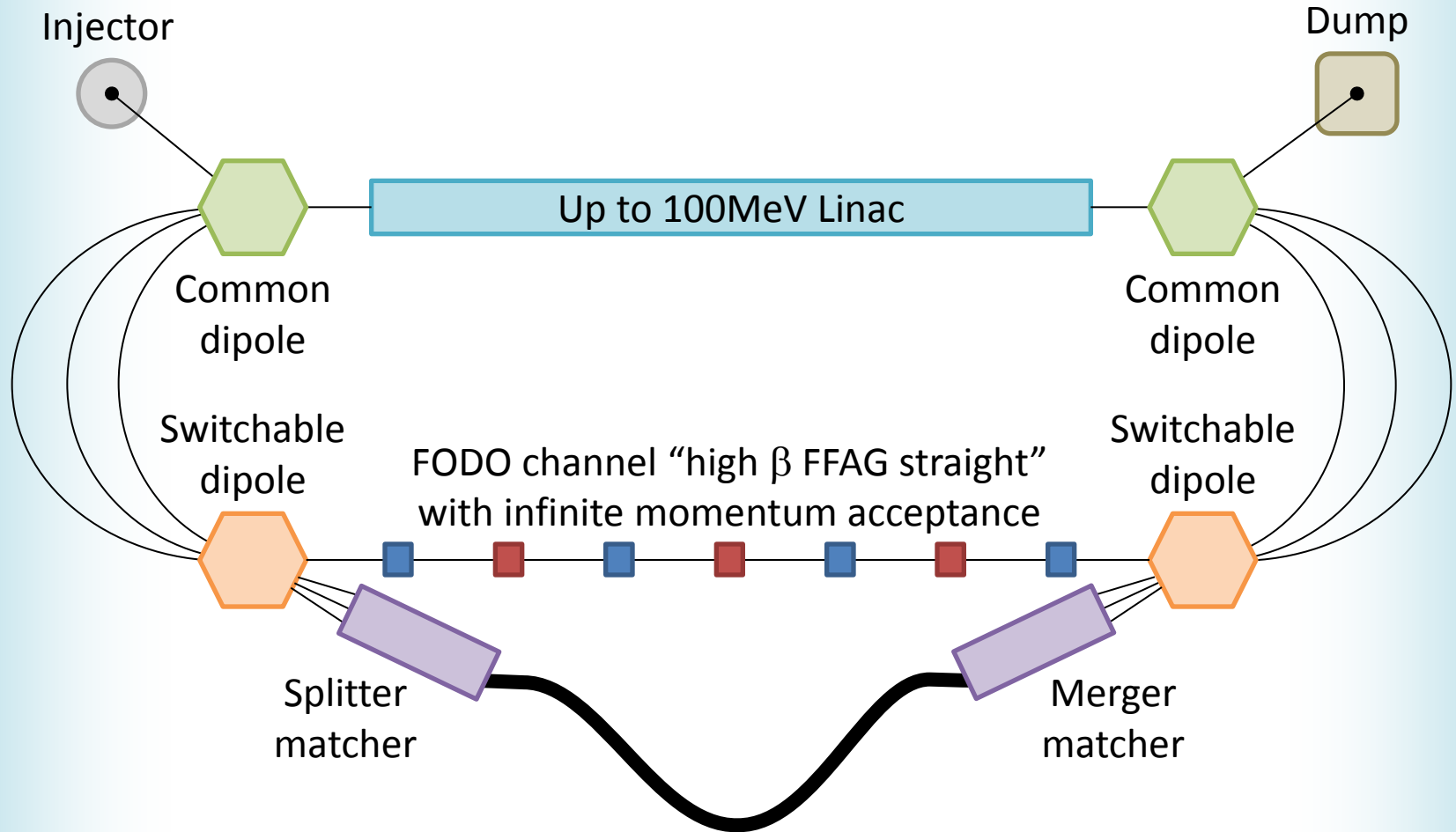
Alternative Low-Cost Solution for Cornell Multi-Pass ERL-FFAG

Demonstrating a multi-pass
superconducting ERL is at least as
important for eRHIC as FFAG

Motivation

- Use single-energy arcs to do the 180 degree turnaround
 - Making an FFAG that small was causing issues
 - Single energy arcs are cheaper
 - Can be added to over time: 2, 3, then 4 passes
- Put a switchable FFAG section on the far side
 - Decouples commissioning of ERL from FFAG
- Allows full $\sim 400\text{MeV}$ energy design

Layout



FFAG demo beamline e.g. bypass-shaped

Observations

- FFAG radius of curvature decoupled from site
 - Thus can use slightly longer cells
 - Can use eRHIC-like fields instead of eRHIC+50%
- Could reconfigure FFAG beamline for studies
 - Emulate arcs, straights, transitions, bypasses, crossovers, eRHIC-style extraction
 - Multi-pass ERL could still run while reconfiguring
 - eRHIC style of design means this only requires shifting the existing FFAG magnets around!