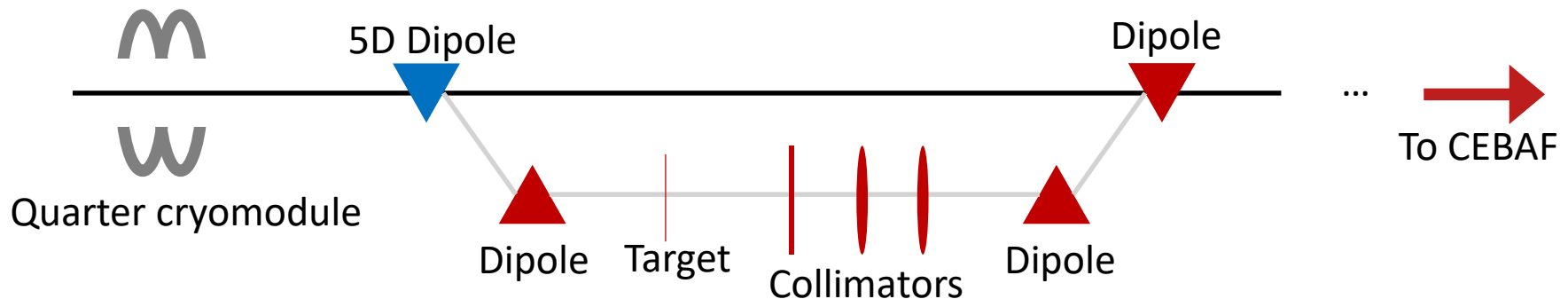


# Background info on the project

- Goals: evaluate CEBAF acceptance and compare to simulation; evaluate machine limits on positron beam size and current; transport positrons through parts of the CEBAF injector
- How? Build a bypass beamline in the CEBAF injector to degrade electron beams through multiple scattering in thin target foils
  - Phase space range between nominal CEBAF parameters and positron distribution posited in JLAB-TN-21-043
- In FY23, we will design the bypass beamline and procure components
- In FY24, we will install/commission the bypass beamline; measure the machine acceptance with electrons; generate and transport positrons

Beamline concept at 5D line in CEBAF injector



## V. Lizarraaga work plan

- Target simulations: Geant, multiple scattering
  - What kinds of distributions to expect from different beam parameters on target?
  - What are reasonable target materials and thicknesses, and what does the beam look like after the target?
    - After passing through transverse and momentum apertures?
    - After bending through two dipoles?
- Positron generation: if the target is thick enough, positrons will be produced through bremsstrahlung/pair production
  - Max yield will be at energy below incident electron energy
  - How does the back half of the bypass chicane change to transport positrons back to injector beamline?
- Commissioning of degrader beamline, measurements