

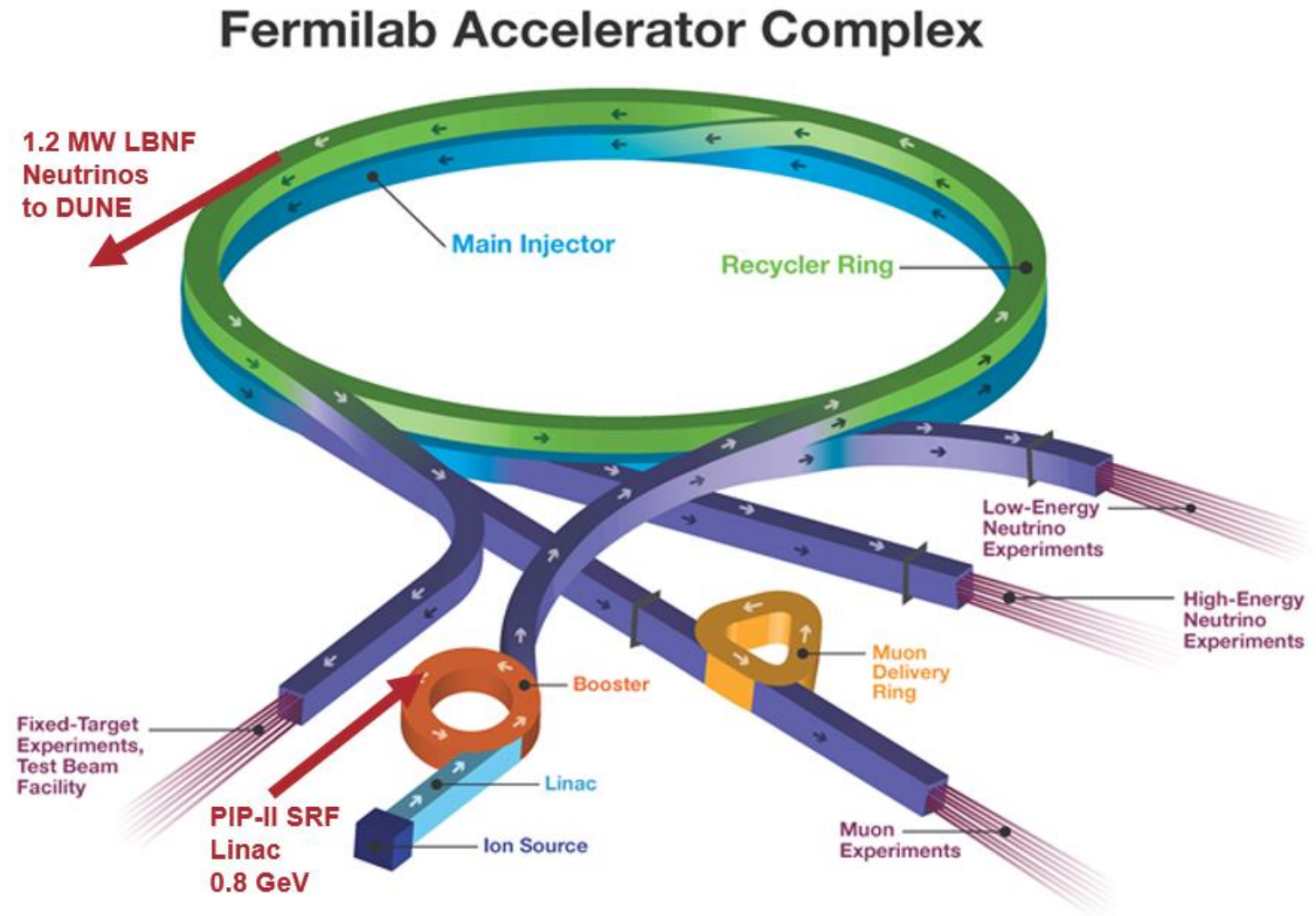
# GEM 5 min 5 slide: High Pressure Rinsing of Accelerator Cavities

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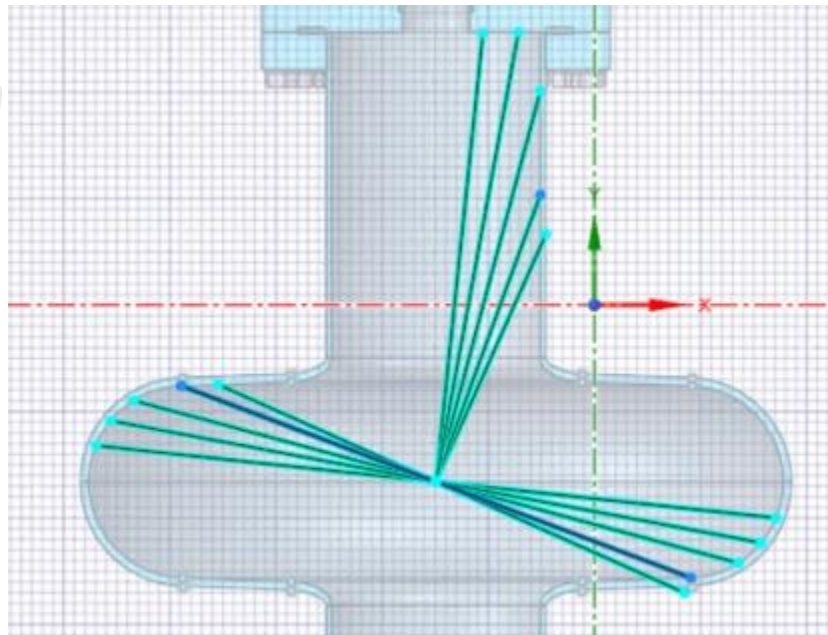
# PIP-II

- Linac energy increased from 0.4 GeV to 0.8 GeV
- Energy of Neutrinos delivered to DUNE increased from 0.75 MW to 1.2 MW

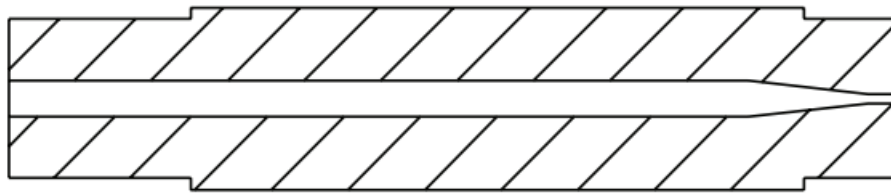


# The Problem

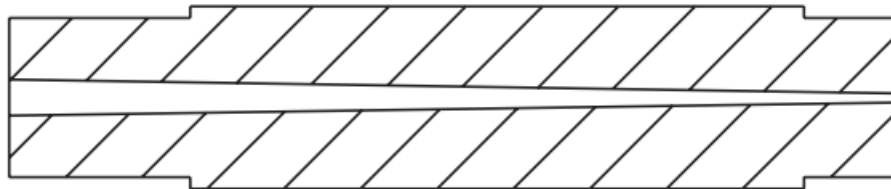
- Particle contaminants in the cavity act as electron field emitters, limiting performance
- Use High Pressure Water Rinse (HPR) to remove particle contaminants
- What is the most effective nozzle for cleaning the cavities?



# High Pressure Nozzles



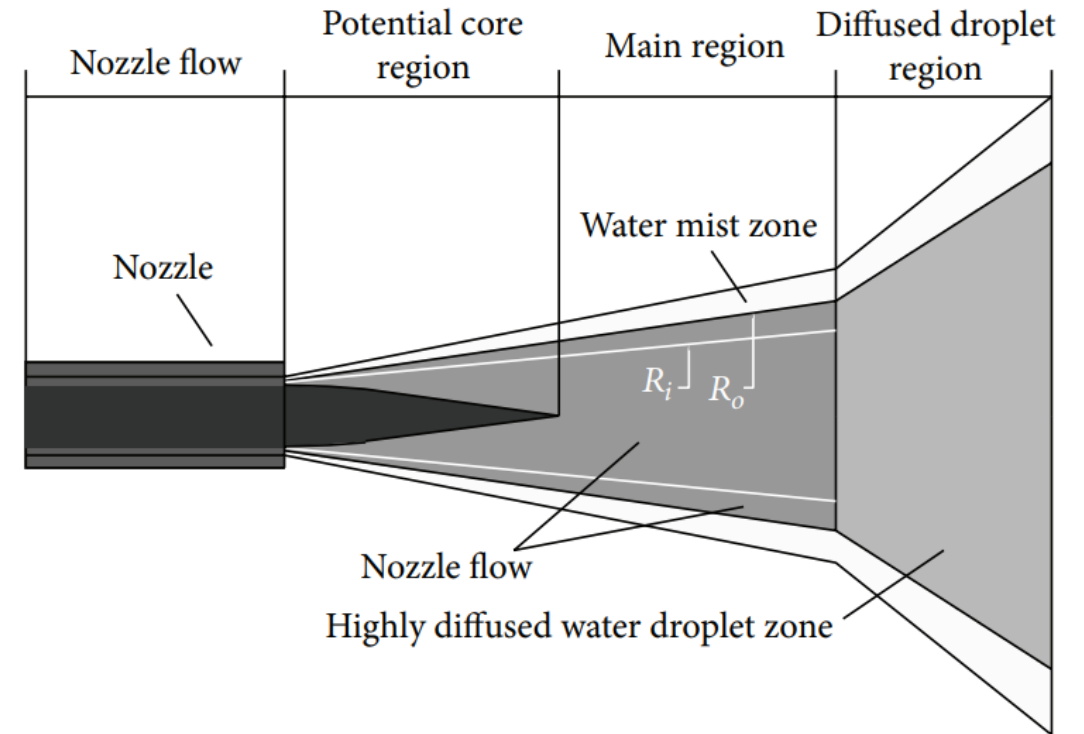
(a) CC nozzle



(b) TC nozzle



(c) Stepped nozzle

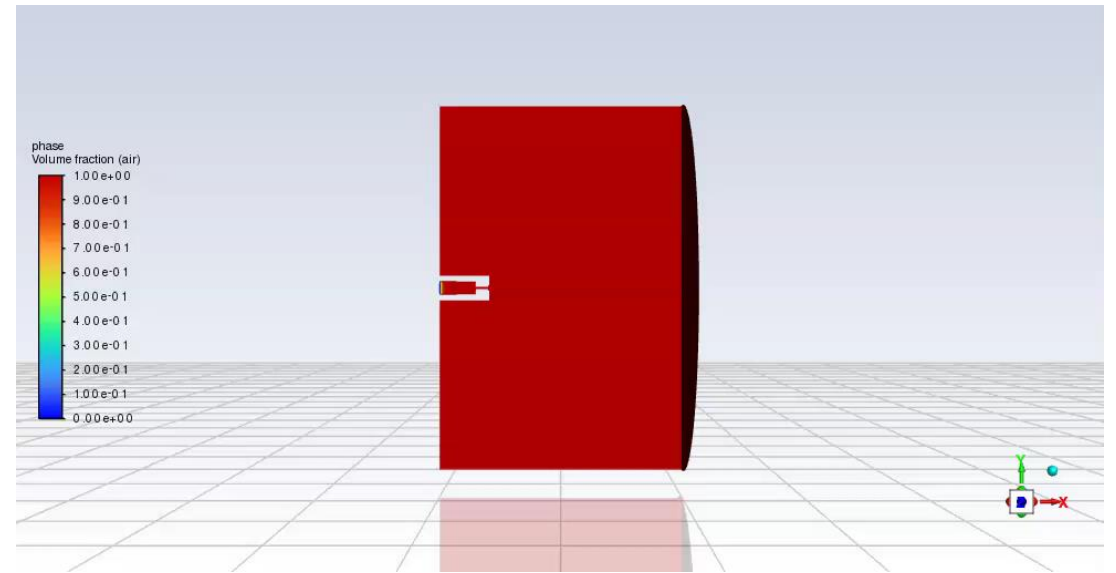
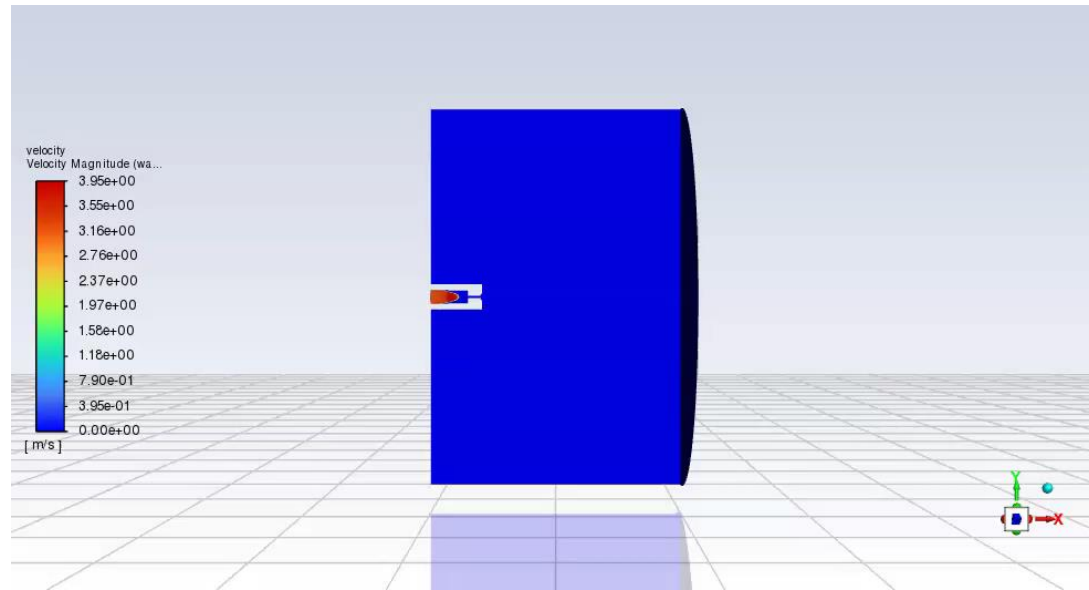


[1] Shuce Zhang, "Structure Optimization and Numerical Simulation of Nozzle for High Pressure Water Jetting"

[2] M. C. Leu, "Mathematical modeling and experimental verification of stationary waterjet cleaning process,"

# Preliminary Results

Operating pressure is 1250 psi.



# Next Steps

- Evaluate pressure on cavity wall
- Find trends in relationship between orifice design and spot size
- Evaluate static pressure and wall shear profiles on the impinging wall with different nozzles at different spray-wall angles

