

# Design, Development, and Testing of High-Velocity Spoke Cavities

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Within the accelerator community, the spoke geometry is generally considered to be a reasonable, if not the preferred choice for the medium-velocity region. A collaboration between Old Dominion University and Jefferson Lab has been established to investigate their feasibility for the acceleration of high-velocity particles as well. Two such cavities have now been tested. Specifically, a 325 MHz,  $\beta_0 = 0.82$  single-spoke cavity and a 500 MHz,  $\beta_0 = 1$  double-spoke cavity. The complexity and size of these geometries presented some interesting challenges which required innovative solutions. I will describe our experience with the electromagnetic optimization, fabrication, and processing. Finally, the cryogenic test results for both cavities will be presented.