

## **Ion beam guiding with curved Teflon tubes**

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Beam guiding capability of tilted and curved Teflon tubes was tested with tens to hundreds nano-ampere 8 keV  $\text{Ar}^{8+}$  ions. The tubes used were about 50mm long, 1mm/2mm inner and outer diameters. One straight tube and three curved tubes were tested. The curved tubes were bent into fixed deflection angles of 9.6, 17.5 and 26.7 degrees, with the corresponding radii of curvature  $R=270$ , 150, and 100 mm, respectively. With the straight tube, a certain fraction of injected current was transmitted even up to 6 degrees of tilted angle, but the guided current vanished when the tube was tilted more than 7 degrees. On the other hand, transmission of several tens percents of injected beam was observed for all three curved tubes though the deflection angle was larger than the limit of guiding with a tilted straight tube. These results demonstrate that a curved tube can guide the ion beam more efficiently than a tilted straight tube, and may open a possible way to develop flexible ion beam deflectors akin to optical fiber light guides.