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Narrow electron beam production and transmission properties with glass capillaries BUDDHIKA DASSANAYAKE, JOHN TANIS, ASMA AYYAD, Western Michigan University, Kalamazoo, MI, 49009 — Transmission of 300-1000 eV electrons through a single cylindrically-shaped glass capillary of Borosilicate glass was studied [1,2]. The capillary had a diameter of $\sim$0.20 mm and a length of $\sim$15 mm. Transmitted electron intensities revealed three distinct regions with different characteristics: (1) for sample tilt angles (with respect to incident beam) less than 1° the transmission was dominated by the direct beam (no interactions with inner capillary wall), (2) for tilt angles between 1° and $\sim 3.5^\circ$ the majority of transmission was due to Coulombic repulsion by charge deposition at the capillary entrance, and (3) for tilt angles larger than 3.5° transmission was governed by inelastic scattering and as a result lost energy. Energy dependence and time evolution studies were carried out to seek more insight into the transmission process.

[1] B.S. Dassanayake *et. al.*, *Phys. Rev. A* **81**, 020701(R) (2010).
[2] B.S. Dassanayake *et. al.*, *Phys. Rev. A* **83**, 012707 (2011).

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