



# Comparative Analysis of Beam Qualities: Small Animal Cabinet Irradiators vs. NIST Beams

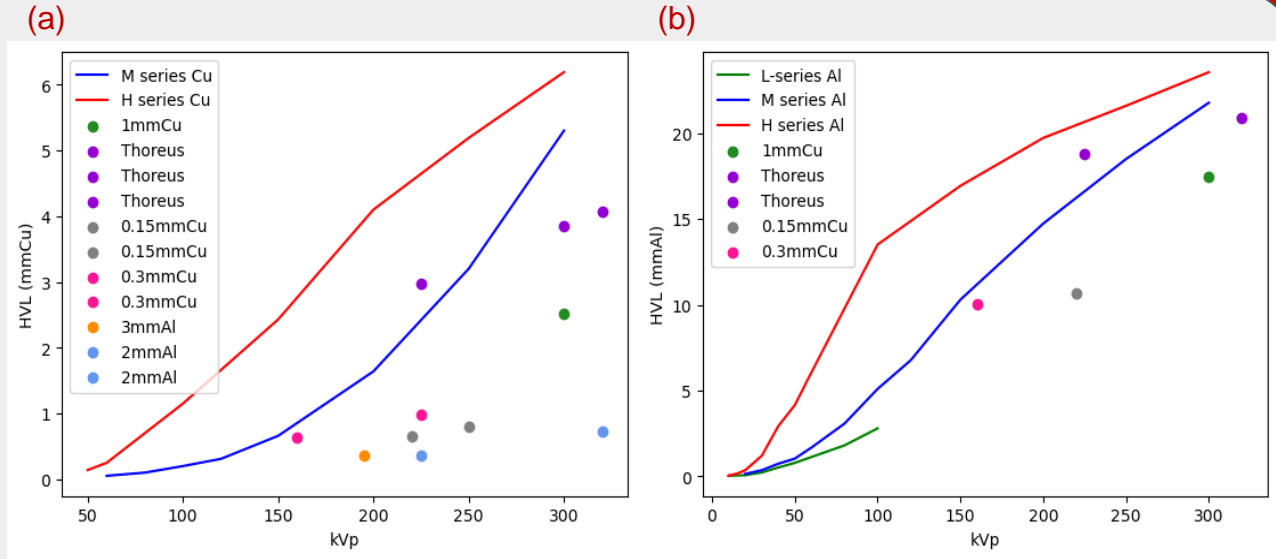


**MOTIVATION:** Small animal cabinet irradiator filtration, recommended operating potentials, and functional range differs from NIST beams

**APPROACH:** A Varex NDI-451Be x-ray tube and a medium energy free air chamber with custom filters measured aluminum and copper half-value layer and quarter-value layer

## RESULTS:

- Altering the measurement distance from the standard 100cm to the maximum cabinet irradiator distance of 70 cm impacts the HVL by 0.91% and QVL by 1.25%
- The experimental aluminum and copper HVLs had an average difference of -11% and -51% from the NIST M-series beams, respectively



**Figure 1:** (a) Copper and (b) Aluminum HVLs measured using small animal cabinet irradiator filters compared to NIST beam L-, M-, and H-series