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Dependence of thick-target bremsstrahlung produced by monoenergetic low-energy electrons on the atomic number of the target SEAN CZARNECKI, ASHTON SHORT, SCOTT WILLIAMS, Angelo State University — The dependence of bremsstrahlung emitted by monoenergetic incident electrons of low energy (4.25 keV and 5.00 keV) on the atomic number of thick aluminum, copper, silver, tungsten, and gold targets has been investigated experimentally. The data suggest that the intensity of the thick-target bremsstrahlung emitted is more strongly dependent on the atomic number of the target material for photons with energies approximately equal to the incident electron energy than for photons of lower energies. The data also suggest that the dependence of thick-target bremsstrahlung on the atomic number of the target material is stronger for incident electrons of higher energies than for incident electrons of lower energies. The results of these experiments are compared to the results of simulations performed using the PENELOPE program, which is commonly used in medical physics, and also to the results of thin-target bremsstrahlung theory. Comparisons suggest that the experimental dependence of thick-target bremsstrahlung on the atomic number of the target material may be slightly stronger than the results of the PENELOPE code suggest.

Sean Czarnecki
Angelo State University

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