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Study of UV-VIS Emissions from Heavy Ions Interacting with Matter at SIS Extraction Energies

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This paper reviews the cross sections of various processes contributing to UV-Vis emissions from highly charged heavy ions interacting with matter at SIS extraction energies (300 to 1500 MeV/u). The interaction of these ions with matter generates detectable radiation, with mechanisms influenced by both material properties and beam characteristics. By analyzing theoretical models and experimental results from the literature, we elucidate the dynamics governing these interactions, particularly with gaseous targets and thin foils. Furthermore, we extend this understanding to applications in particle detection and counting, presenting selected novel results obtained with various detector prototypes.

Footnotes

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