

MEASUREMENTS OF POSITRONS FROM PAIR PRODUCTION IN COULOMB COLLISIONS OF 33-TeV LEAD IONS WITH FIXED TARGETS¹

*C. R. Vane, S. Datz, E. F. Deveney,² P. F. Dittner, H. F. Krause, R. Schuch,³
H. Gao,³ and R. Hutton⁴*

Free positrons from electron-positron pairs produced by 33-TeV Pb^{82+} in Coulomb collisions with targets of carbon $[(\text{CH})_x]$, aluminum, palladium, and gold have been measured to determine cross sections and momentum distributions. Upper limits have been established for contributions from multiple pair formation. Comparison with similar data taken for 6.4-TeV S^{16+} ions shows that cross sections scale as the product of the squares of the projectile and target nuclear charges. Positron momentum distributions for S^{16+} and Pb^{82+} ions on all targets are observed to be similar, but indicate a tendency for higher energy positron emission for the Pb^{82+} projectiles.

-
1. Abstract of published paper: *Phys. Rev. A* **56**, 3682 (1997).
 2. Oak Ridge National Laboratory Postdoctoral Research Participant.
 3. Stockholm University, Sweden.
 4. Atomic Spectroscopy, University of Lund, Sweden.