

Abstract Submitted
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**Arthur Compton's 1941 Analysis of Explosive Fission in U-235:
The Physics** CAMERON REED, Alma College — In November 1941 Arthur Compton prepared a report for Vannevar Bush regarding the possibility of explosive fission of U-235. This remarkable report, arguably the parent document of the Los Alamos Primer, presented detailed estimates for the critical mass, expected energy release, efficiency, destructive effects and probable cost of such a weapon. This paper will examine the physics behind Compton's estimates for the critical mass and efficiency of a fission weapon and compare his results to those derived from present-day cross-sections and secondary-neutron numbers. His approach to the efficiency calculation is found to be particularly interesting in that it utilizes some very basic undergraduate physics.

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