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# Early Alpha Scattering Results by Ernest Rutherford

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Most physicists know that Rutherford proposed the presence of an atomic nucleus in 1911 when he was in Manchester based on the result of an alpha scattering experiment performed by Geiger and Marsden. However, the first results on alpha scattering were obtained much earlier, during the time Rutherford was at McGill. In a paper Rutherford published in 1906 entitled "Retardation of the alpha particle from radium in passing through matter"[1] a small section is titled "Scattering of the alpha rays". In this experiment he observed that in passing through a foil of mica the alpha particles were scattered by a small angle. From that observation he estimated that the alpha particles were subject to an average transverse electric field of about 100 million volts per cm. He concluded by "Such a result brings out clearly the fact that the atoms of matter must be the seat of very intense electrical forces–a deduction in harmony with the electronic theory of matter." These were clearly the precursor to the experiments that led to the discovery of the atomic nucleus.

[1] Rutherford, E. (1906), Philosophical Magazine Series 6,12:68,134- 146

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