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Rutherford's Nuclear Model

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Rutherford's nuclear model originally was a theory of scattering that represented both the incoming alpha particles and their targets as point charges. The assumption that the alpha particle, which Rutherford knew to be a doubly ionized helium atom, was a bare nucleus, and the associated assumption that the electronic structure of the atom played no significant role in large-angle scattering, had immediate and profound consequences well beyond the special problem for which Rutherford introduced them. The group around him in Manchester in 1911/12, which included Niels Bohr, Charles Darwin, Georg von Hevesy, and Henry Moseley, worked out some of these consequences. Their elucidation of radioactivity, isotopy, atomic number, and quantization marked an epoch in microphysics. Rutherford's nuclear model was exemplary not only for its fertility and picturability, but also for its radical simplicity. The lecturer will not undertake to answer the baffling question why such simple models work.