MATILDA EFFECT

Pionierinnen der Forschung

Female Pioneers of Research

Pt. 44

Maria Goeppert Mayer

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Maria Goeppert-Mayer (1906-1972)

Physicist

Coming from an old academic family and born in Upper Silesia, she grew up in Göttingen and, after completing her Abitur in 1924, initially studied mathematics there before switching to physics. In 1930, she also earned her doctorate there with a dissertation on the two-photon process.

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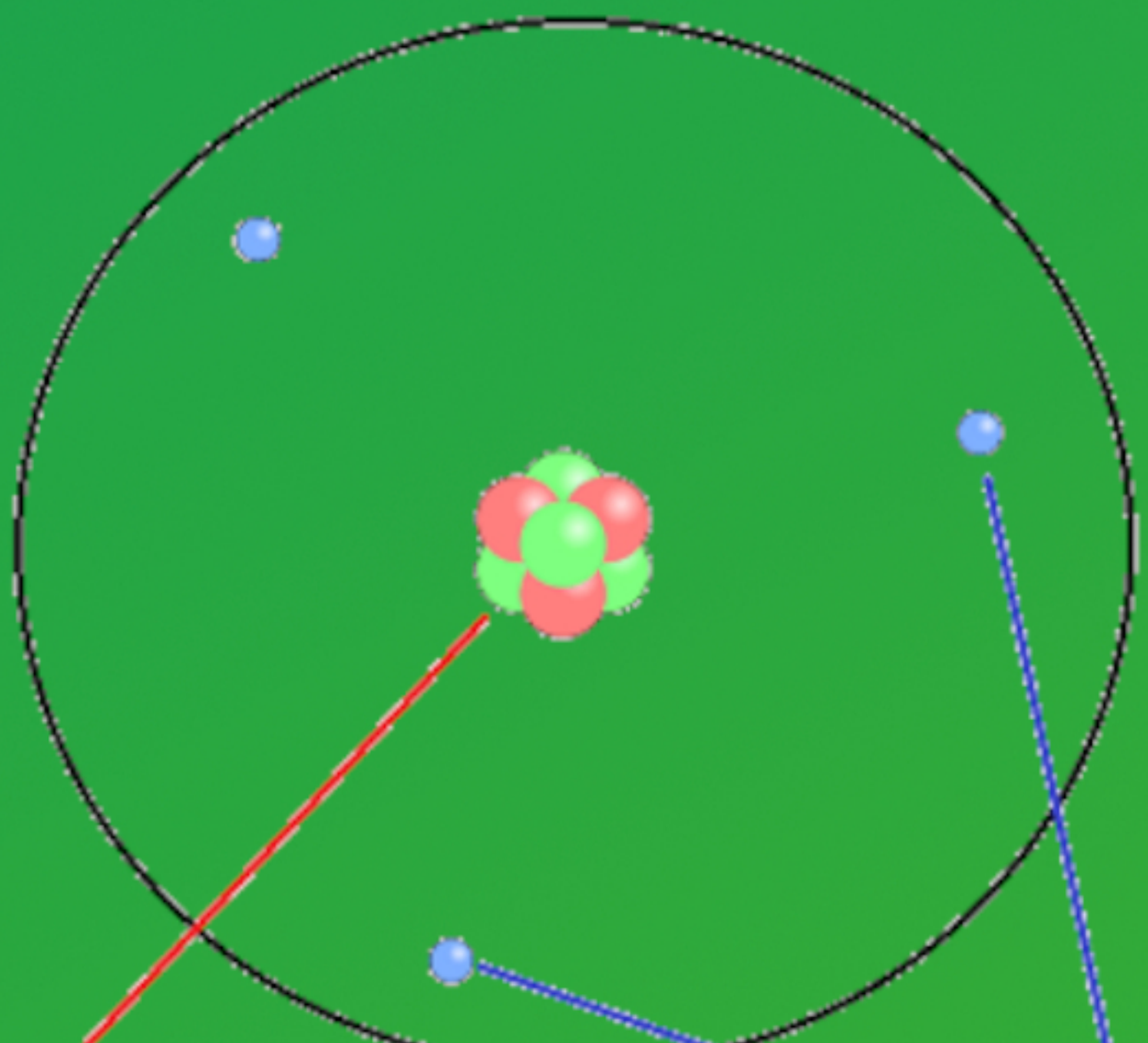
She then moved to the United States with her husband but, due to discrimination, did not receive a paid position for a long time.

During World War II, she worked on the Manhattan Project, conducting research on isotope separation.

After the war, she worked in Chicago and developed the nuclear shell model.



Protons (red) and neutrons (green) are bound to each other in the nucleus of an atom

Electrons are outside the nucleus of the atom

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Her development of the shell model occurred in parallel with, but independently from, Hans Jensen.

While researching the origin of the elements, which involved compiling isotope lists, she discovered that atomic nuclei with 2, 8, 20, 28, 50, 82, or 126 protons or neutrons (the "magic numbers") were particularly stable. Previously, it was believed that a shell model in the atomic nucleus was not possible. However, she found further evidence and published it for the first time in 1948.

A spin-orbit coupling turned out to be the key explanation for the model.

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„Mein Vater sagte: ‚Werde nicht eine Frau‘ – und meinte damit eine Hausfrau … ohne Interessen.“

„My father said, 'Don't grow up to be a woman,' and what he meant by that was, a housewife ... without any interests.“

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