Arnold Johannes Wilhelm Sommerfeld Encyclopedia Article

Arnold Johannes Wilhelm Sommerfeld

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Arnold Johannes Wilhelm Sommerfeld

1868-1951

German physicist whose investigations of atomic spectra led him to revise Niels Bohr's atomic theory (1916). Sommerfeld replaced Bohr's circular orbits with elliptical ones and introduced the azimuthal quantum number. These changes made it possible to explain the fine structure of the hydrogen spectrum. The Bohr-Sommerfeld model was fruitful but failed to explain the Zeeman effect—splitting of spectral lines due to strong magnetic fields. Sommerfeld introduced the magnetic quantum number to account for these effects.