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150 years of Maxwell's (other) equations and application to plasma wakefield acceleration

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In 1867, just two years after laying the foundations of electromagnetism, J. Clerk Maxwell presented a fundamental paper on gas dynamics, in which he described the evolution of the gas in terms of certain “moments” of its velocity distribution function. This inspired Ludwig Boltzmann to formulate his famous kinetic equation, from which followed the H-theorem and the connection with entropy. The present talk celebrates the 150th anniversary of the publication of Maxwell's formalism, and discusses how its generality and adaptability enable it to play a key role in efficient modeling of electron beams in plasma wakefield acceleration.

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