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60 years “Foundations of Kinetic Theory”

Abstract: In 1956 Mark Kac published his celebrated article “Foundations of Kinetic Theory” in which he laid out a program for studying systems of colliding particles by means of probabilistic methods. He proposed a master equation to describe a one dimensional gas in a spatially homogeneous situation and defined what we nowadays call “propagation of chaos”. Further he proved propagation of chaos and gave a satisfactory derivation of the associated non-linear Boltzmann-Kac equation. In the past 15 years this program received renewed attention and this talk is a summary of some of the results in this area.