

Aurore Courtoy – Colloquium Seminar – January 18, 2024  
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Pion structure: a state-of-the-art phenomenological perspective

In this colloquium, I will review the characteristics of the pion, from its emergence from symmetry breaking to its parton content. As the connection between those two key aspects of the pion remains elusive, it has been the topic of exceptional theoretical research programs in the past decades. With the recent progress on both the experimental and lattice-QCD sides, new information is brought to complement our understanding of the pion. The bridge between data, theory, and lattice is built thanks to phenomenological, or global, QCD analyses — the focus of this talk. I will review recent efforts in the determination of the distribution of partons in the pion, with an emphasis on uncertainty quantification. The Fantômas project aims to explore the role of trial shapes for the distribution of quarks and gluons in the final uncertainty that results from the global analysis. I'll present our first results within the Fantômas framework, obtained for the Parton Distribution Functions of the pion. I'll comment on future avenues to reduce the gap between the description of inclusive and exclusive processes for the pion.