

陈晨特任副研究员

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研究方向 粒子物理与核物理
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个人经历:

2007 -- 2013 中国科学技术大学, 博士
2011 -- 2013 美国阿贡国家实验室, 联合培养博士研究生
2013 -- 2016 中国科学技术大学, 博士后
2016 -- 2019 巴西圣保罗州立大学, 博士后 (FAPSPE Fellow)
2019 -- 2021 德国吉森大学, 博士后
2022 -- 至今 中国科学技术大学, 特任副研究员

学术研究:

主要研究领域:

Continuum Schwinger function methods for quantum field theory and their use for the prediction of phenomena within the realm of strong interactions in the Standard Model of particle physics.

主要学术成果:

(1) By accounting for the gluon contribution, I presented the first symmetry-preserving predictions for the pion and kaon valence-quark distribution functions. This work was used to win approval from CERN management for the AMBER Phase-1 project and provides crucial theory background for the development of Phase-2 plans.

(2) Using the quark+diquark Faddeev equation description of baryon structure, I supplied the first predictions for the complete array of nucleon axial and pseudoscalar form factors. In the process, I solved a problem that had escaped understanding for more than 20 years. This work opens the door to an entirely new array of hadron structure studies using continuum Schwinger function methods.

(3) I developed and refined a novel method for use in the interpolation of hadron form factors, calculated using continuum Schwinger function methods, and their subsequent reliable extrapolation to very large momentum transfers with quantifiable uncertainty estimates.

(4) I was an invited contributor (author of Sec. 2.2) to the following review article: Diquark Correlations in Hadron Physics: Origin, Impact and Evidence, M. Yu. Barabanov et al. [incl. C. Chen], Prog. Part. Nucl. Phys. 116 (2021) 103835, which joined 27 experimentalists, phenomenologists, and theorists in an effort to describe today' s status of diquark correlations in hadrons.

近期研究兴趣:

- (1) Baryons in the quark+diquark framework
- (2) Dyson-Schwinger equations (DSEs): Beyond the rainbow-ladder truncation
- (3) Exotic hadrons