

专刊

Further insights into the $\rho\pi$ puzzle

赵强^{1,2,3}, 李刚¹, 张肇西⁴

¹ Institute of High Energy Physics, CAS, Beijing 100049, China

² Department of Physics, University of Surrey, Guildford, GU2 7XH, United Kingdom

³ Theoretical Physics Center for Science Facilities, CAS, Beijing 100049, China

⁴ Institute of Theoretical Physics, CAS, Beijing 100080, China

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摘要 Based on a systematic investigation of $J/\psi(\psi') \rightarrow VP$, where V and P stand for light vector and pseudoscalar mesons, we identify the role played by the electromagnetic (EM) transitions and intermediate meson loop transitions, which are essential ingredients for understanding the J/ψ and ψ' couplings to VP. We show that on the one hand, the EM transitions have relatively larger interferences in $\psi' \rightarrow \rho\pi$ and $K^*K+c.c.$ as explicitly shown by vector meson dominance (VMD). On the other hand, the strong decay of ψ' receives relatively larger destructive interferences from the intermediate meson loop transitions. By identifying these mechanisms in an overall study of $J/\psi(\psi') \rightarrow VP$, we provide a coherent understanding of the so-called “ $\rho\pi$ puzzle”.

关键词 [vector-meson dominance, decays of \$J/\psi\$, \$\psi'\$, other quarkonia, hadronic decays of mesons](#)

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DOI:

通讯作者:

赵强 zhaog@ihep.ac.cn

作者个人主页:

赵强^{1;2;3}; 李刚¹; 张肇西⁴

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