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Understanding charm CP

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Recently LHCb announced the exciting discovery of direct CP asymmetry in D^0 decays to K-pairs and pion pairs around 15×10^{-4} . It is extremely difficult to do reliable calculations for the expectations from the SM for these asymmetries because of large non-perturbative effects. However, a novel mechanism is proposed to help us understand roughly the size of the asymmetry and the key idea readily leads to several testable predictions. Moreover, even though the original amplitudes for $D^0 \Rightarrow h^+ h^-$ are extremely difficult to handle on the lattice using known techniques, a class of reactions with sizeable direct CP asymmetries where precise tests of the SM are possible will be discussed.

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