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An Amplitude Analysis of $D^0 \rightarrow 4\pi$ at CLEO-C

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Here we present a systematic amplitude analysis of the decay from D^0 and D^0 -bar mesons to four charged pions, using the full dataset from Cleo-C. A genetic algorithm was used to refine the amplitude model while fitting to five dimensional Dalitz plots. While the model is of interest in its own right, the analysis also allows for the measurement of phase differences, such as from the CP violating phase γ in the longer decay chain $B \rightarrow D(\rightarrow 4\pi)K$, seen at LHCb.

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