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# Global parameterizations of $\pi\pi$ scattering with dispersive constraints: beyond the $S_0$ wave

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## Abstract

We provide new global parameterizations of  $\pi\pi$  scattering for the  $S_2$ ,  $P$ ,  $D$ ,  $F$ , and  $G$  partial waves up to roughly 1.8 GeV, easy to implement for phenomenological use. With earlier  $S_0$ -wave parameterizations, slightly updated here, they reproduce previous partial wave dispersion analyses up to the  $\pi\omega$  threshold. In addition, these new parameterizations have improved their description of new  $P$ -wave data, the inelasticity in various waves, and their fulfillment of Roy-like and forward dispersion relations. The latter now test very high partial waves and have an improved matching with the Regge regime, often extending them up to 1.6 GeV. Above 1.6 GeV and up to 1.8 GeV the parameterizations are simple unconstrained fits to data.

