



## Comments on some chiral-dispersive calculations of pion-pion scattering

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We consider the (nominally) very precise  $\pi\pi$  scattering amplitude obtained by Colangelo, Gasser and Leutwyler, *Nucl. Phys.* **B603**, 125, (2001) (CGL). We point out that the input used by CGL for energies above 1.42 GeV is clearly different from what one expects the physical amplitude to be and, in particular, their Regge parameters are rather unorthodox and lead to cross sections in disagreement with experimental  $\pi\pi$  cross sections. Moreover, the error they ascribe to the  $\delta_0^{(0)}$  phase at 0.8 GeV, an important part of their input, is underestimated by a factor of two or more.

Then, we compare CGL results with those obtained by other authors using Roy equations, as well as with direct fits to experimental  $\pi\pi$  data, and we also discuss consistency tests of the CGL amplitude; in particular, the Olsson sum rule, the  $b_1$  parameter and the D wave scattering length for  $\pi^+\pi^- \rightarrow \pi^0\pi^0$  are discussed in detail. The outcome of these tests is mismatch of the CGL amplitude, for several quantities (including the ones just cited) by as much as 4 standard deviations.

The present communication was based on a recent paper by the author and J. R. Peláez (hep-ph/0304067, to be published in *Phys. Rev. D*), as well as another (Peláez and F.J.Y, FTUAM 03-19) that will appear soon. The full text of this contribution, together with some extra details, may be found in the net, in the article by F. J. Ynduráin with the same title as this communication, FTUAM 03-14 (hep-ph/0310206).

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