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The nature of a1(1420) and triangle singularity mechanism

We demonstrate that the triangle singularity mechanism would account for the creation of the a1(1420) in the invariant mass spectrum of pi- pi- pi+ in the pi- p scattering observed by the COMPASS Collaboration. The same mechanism also accounts for the eta(1405/1475) puzzle since its interference will lead to significant changes to the lineshapes and peak positions for the same state when it decays into different channels such as K K-bar pi, eta pi pi, and 3pi. The property of its isospin-0 partner f1(1420) is also driven by the same mechanism.

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