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Dalitz plots and lineshape of $a_1(1260)$ through a three-body unitary approach DANIEL SADASIVAN, Ave Maria University, MAXIM MAI, The George Washington University, HAKAN AKDAG, Helmholtz-Institut für Strahlen- und Kernphysik (Theorie), Universität Bonn,, MICHAEL DOERING, The George Washington University — We present our formulation of the final-state interaction of the $a_1(1260)$ resonance decay in a manifestly three-body unitary parameterization and fit it to the $a_1(1260)$ lineshape measured by the ALEPH experiment. Dalitz plots calculated from this fit are presented. The work demonstrates the feasibility to numerically solve a previously derived amplitude and its generalization to isobars with spin and coupled channels. The model can also be applied to other meson decays and modified for the finite-volume problem as it arises in lattice QCD due to its manifest unitarity.

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