$a_2^0(1320)$ *****

March 25, 2009

The $a_2^0(1320)$ is the neutral member of the isospin triplet from the lightest tensor multiplet. The mass and width are taken from [**?**]. The limit on the off-shellness of the particle is set to twice the width. The decay modes are similar to those in EvtGen apart from the modelling of $\omega\pi\pi$ as $\omega\rho$, the inclusion of the $\eta'\pi$ and $\gamma\gamma$ modes the omission of the $\pi\gamma$ mode. The $a_2^0(1320)$ has mass 1318.3 MeV and is unstable. The $a_2^0(1320)$ has spin 2, charge 0 and is colour neutral. The $a_2^0(1320)$ is a meson and is from the 1^3P_2 multiplet.The $a_2^0(1320)$ has width 107 MeV. The lower limit on the mass of the particle is 214 MeV and the upper limit is 214 MeV. These are the deviations from the on-shell value. The branching ratios are fixed. The properties of the particle and its antiparticle are taken to be charge-conjugate to each other. The PDG code is 115.

Branching Ratio	Rating	On/ Off	Outgoing Particles	Description	Decayer
0.349434	*****	on	ρ^+, π^-	The decay of $a_2^0(1320)$ to a rho and a pion, the branching ratio is from [?] with a minor change to ensure the branching ratios sum to unity. This is half the rate from [?] as there are two states.	Herwig::TensorMesonVectorPScalar::T
0.349434	*****	on	ρ^-, π^+	The decay of $a_2^0(1320)$ to a rho and a pion, the branching ratio is from [?] with a minor change to ensure the branching ratios sum to unity. This is half the rate from [?] as there are two states.	Herwig::TensorMesonVectorPScalar::T
0.144053	*****	on	π^0, η	The decay of $a_2^0(1320)$ to an η and a pion with branching ratio from [?] (there are minor adjustments to ensure the branching ratios sum to unity.)	Herwig::TensorMeson2PScalar::Tensor
0.103473	****	on	ω, ρ^0	The decay of $a_2^0(1320)$ to two pions, modelled as the ρ, and an omega with branching ratio from [?] (there are minor adjustments to ensure the branching ratios sum to unity.)	Herwig::TensorMesonVectorVector:
0.024184	*****	on	K^+, K^-	The decay of the $a_2^0(1320)$ to two kaons, this is half the rate from [?] due to the two possible final states. In addition there are minor modifications to ensure the branching ratios sum to unity.	Herwig::TensorMeson2PScalar::Tensor
0.024184	*****	on	$K^0, \bar{K}^0$	The decay of the $a_2^0(1320)$ to two kaons, this is half the rate from [?] due to the two possible final states. In addition there are minor modifications to ensure the branching ratios sum to unity.	Herwig::TensorMeson2PScalar::Tensor
0.005229	****	on	η', π^0	The decay of $a_2^0(1320)$ to a pion and an η' with branching ratio from [?]. There are minor adjustments to ensure the branching ratios sum to unity.	Herwig::TensorMeson2PScalar::Tensor
0.000009	****	on	γ, γ	The decay of $a_2^0(1320)$ to two photons, the branching ratio is from [?] with minor changes to ensure the branching ratios sum to one.	Herwig::TensorMesonVectorVector:

Table 1: The decay modes of the $a_2^0(1320)$.

The $a_2^0(1320)$ decay modes are given in Table 1 and the total branching ratio is 1.

The mass generator is `a_20mass` for the $a_2^0(1320)$. The width generator is `a_20width` for the $a_2^0(1320)$.

The particle was checked by Peter Richardson at 15:59:57 on the 22nd of August 2007. The most recently changed decay mode was modified at 15:20:45 on the 13th of October 2006. The particle data was last modified at 13:31:30 on the 21st of August 2007.