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Current working:

1. The baseline solution was already gotten. It includes 2 two-body processes and 5 three-body processes. No four-body process was added into the solution because of its low significance. It seems like that the fit result was enough good without a four-body component. However, due to the wide width of $\overbar{Λ}\left(1800\right)$, its parameters such as mass and width were difficult to get from the fit result. Meanwhile, the shape of $\overbar{Λ}\left(1800\right)$ on the plot is also not well matched with its parameters. Therefore, we still keep one possibility that $\overbar{Λ}\left(1800\right)$ can be replaced with a four-body process.

There are 8 resonances in the solution, which are listed as below.

$$pK^{-}: Λ\left(1405\right), Λ\left(1520\right), Λ\left(1670\right)$$

$$\overbar{Λ}η: \overbar{Λ}\left(1670\right), \overbar{Λ}\left(1800\right)$$

$$pη: N^{+}\left(1535\right), N^{+}\left(1650\right)$$

$$K^{-}\overbar{Λ}: N^{-}\left(1650\right)$$

Processes:

2-body: $Λ\left(1405\right)\overbar{Λ}\left(1670\right)$, $Λ\left(1670\right)\overbar{Λ}\left(1670\right)$

3-body: $Λ\left(1520\right)\overbar{Λ}η$, $pK^{-}\overbar{Λ}\left(1800\right)$, $N^{+}\left(1535\right)K^{-}\overbar{Λ}$, $N^{+}\left(1650\right)K^{-}\overbar{Λ}$, $pηN^{-}\left(1650\right)$

2. Adjust the parameters of the resonances to optimize the fit result. In this step, we will set mass and width of resonances as float parameters and fit the invariant mass spectrum. The best parameters will be gotten in the fit result. Parameters of $Λ\left(1405\right)$ and $Λ\left(1520\right)$ will not be floated, because they are already well measured. However, parameters are always reaching the limit value, especially for $\overbar{Λ}\left(1800\right)$. More adjustments are needed to it.

Next planning:

1. Read books about PWA and QFT to learn more knowledge.

2. Continue to renew pwa results.

3. Generate toy mc after the final solution is got.

4. Estimate other kinds of systematic uncertainties in the analysis.