Let's firstly leave the issues of xs measurements. I have some suggestions on another part of physics in the draft as follows.

1. Can we report the production xs and significance of the new resonance structure.

Answer: Thank you for the suggestion. Of course, we can extract the parameters of the structure around 2.2 GeV. However, we prefer not to report the cross section. The reason is that there are several components which contribute to the cross section around 2.23 GeV, they can fit to the line shape due to interference enhancement or interference cancellation, as shown in the appendix of update memo “F. Fit to the line shape of the cross section”. It’s hard to judge which is the case on one spectrum, which is our case.

For the significance, we estimated it by comparing the change of χ2 value with and without the structure. The following plots shows the result with and without the resonance at 2230 MeV. The difference of χ2 value from BESIII data is about 470, corresponding to a significance of 21σ.

 

(left: fit in the draft, total χ2 is 157.4, for BESIII data is 27.1

right: fit without the resonance at 2230 MeV, total χ2 is 712.9, for BESIII data is 497.9.)

1. To better reveal the properties of the new resonance, may be we can provide the XS ratio between it and the well-known states, like phi or some others.

Answer: The well known states can be the φ(1020), the comparison with it can help to reduce some systematic uncertainties. However, the line shape of φ(1020) used here is cited from BABAR’s result, the comparison cannot offer the benefit. There is no need to do so.

3) Eq.(5), the general formula for the function \Gamma(s) is not given.

Answer: I have mentioned at line 330 that “Fixed width are used for resonances other than phi and rho”, so general formula is a energy-independent value.

4) For the newly measured resonance parameters, as the width is energy-dependent and broad, it is better to give pole position.

A: As mentioned in question 3), the width is treated as a constant in for the newly measured resonance. The pole position is directly related to the Breit-Wigner parameters as discussed in memo (line 270-275), and the width is not very large comparing to its mass, we can just provide one of them in draft.

5) Eq(4): The nickname of included excited vector resonances of rho, omega and phi should be explicitly defined with the full names in PDG, in order to easier for representing the structures.

A: Thank you for your suggestions. The full names have been added in the draft.

6) In the systematics of resonance parameters, do you consider some of issues, such as the inclusion/exclusion of vector mesons, the quoted PDG mass/width of the vector mesons from PDG, and so on?

Answer: We have tried to exclude 1 and 2 vector mesons whose mass higher than 2 GeV, but the fitting status is very bad (large χ2), which means the case of excluding 1 or 2 resonance can not describe the line shape well. As a consequence, we do not take it as systematics. For the quoted PDG mass and width, we try to sample the masses and widths as Gaussian distributions to redo the fit. We can take the widths of the distributions as systematics. We also consider different parameterization of the width of the resonance.

7) Caption of Fig.5 and L311: better to state clearly it is born xs.

A: Thank you for the suggestion.

Some minor issues:

1. L144: add definition for '$s$'

Answer: I have mentioned that $\sqrt{s}$ is the center of mass energy in abstract.

1. Fig.5: add superscript B in \sigma in the y-axis.

Answer: Thank you for the suggestion.

3) L326: approximated parameterized => parameterized in an approximate way

Answer: Thank you for the suggestion.

1. Eq(8), \sigma here is better to be denoted in a different way from the observed xs \sigma in Eq.(2).

Answer: Thank you for the suggestions.