

Suggestions to Nian's analysis on 4γ states

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Main goals

Extend Nian's 4γ states study to understand the background in the JEF search channel $\eta \rightarrow \pi^0 \gamma\gamma$

1. Identify the main sources of contributor to the background
2. Determine the background level

Suggestion #1: Events selection

- Require all decay photons from the signal channel to be detected by FCAL
- Use BCAL as a veto detector to reject additional photons
- Beam energy >8 GeV
- Analyze $\eta \rightarrow \pi^0 \gamma \gamma$ and $\eta \rightarrow \gamma \gamma$ in parallel

Suggestion #2: Normalization

- Normalize the $\eta \rightarrow \pi^0 \gamma \gamma$ to $\eta \rightarrow \gamma \gamma$ in order to get the expected background level under the JEF conditions