# From visibilities to Images: clean algorithm

*a priori* assumption: Source = Collection of point sources.

Idea: "Matching pursuit".

Algorithm:

1 Initialize
   - the residual map to the dirty map;
   - the Clean component list to an empty (NULL) value;
2 Identify pixel of $|I_{\max}|$ in residual map as a point source;
3 Add $\gamma.I_{\max}$ to clean component list;
4 Subtract $\gamma.I_{\max}$ from residual map;
5 Go back to point 2 while stopping criterion is not matched;
6 Convolution by Clean beam (*a posteriori* regularization);
5 Addition of residual map to enable:
   - Correction when cleaning is too superficial;
   - Noise estimation.

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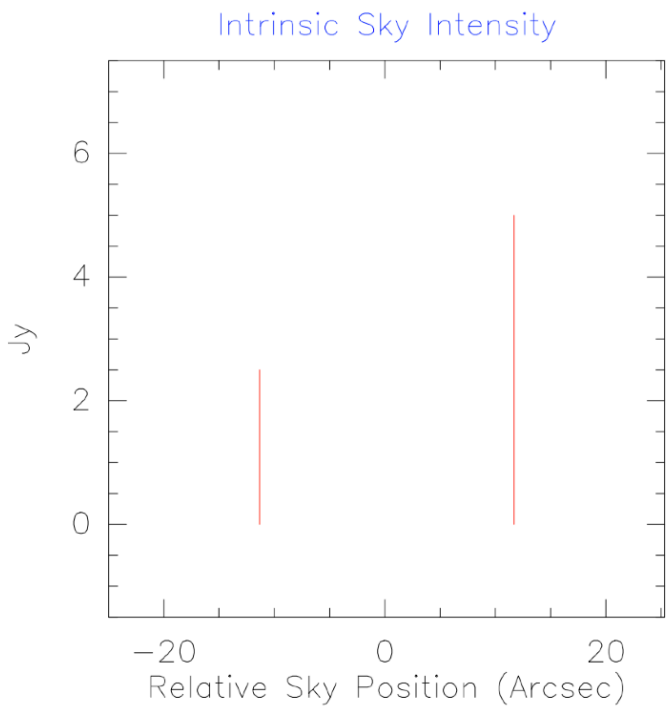


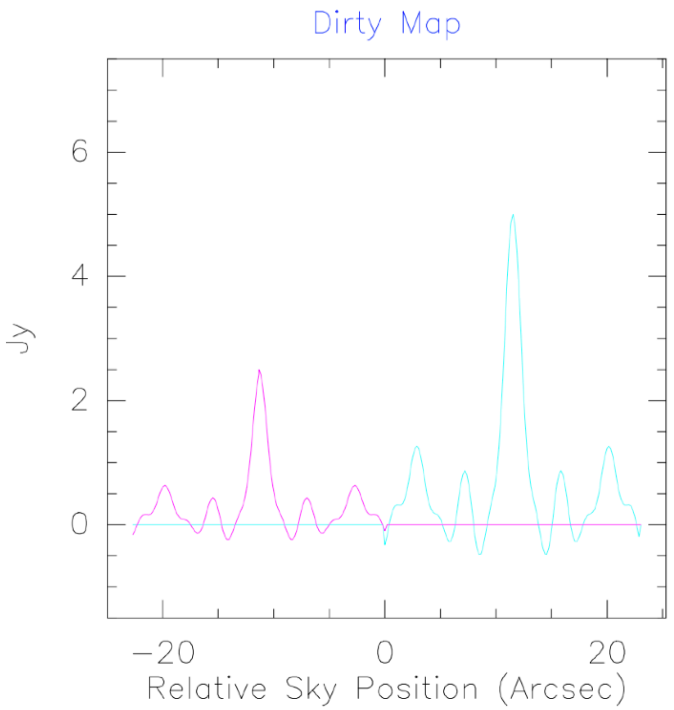


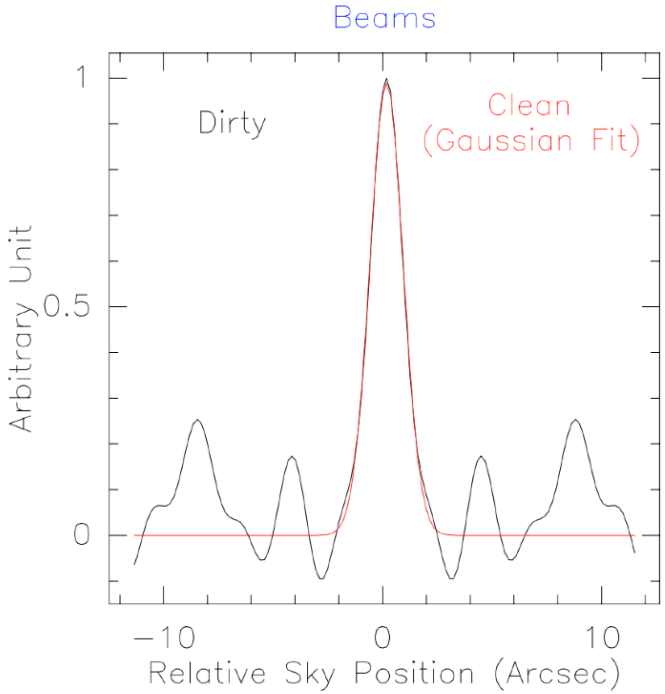

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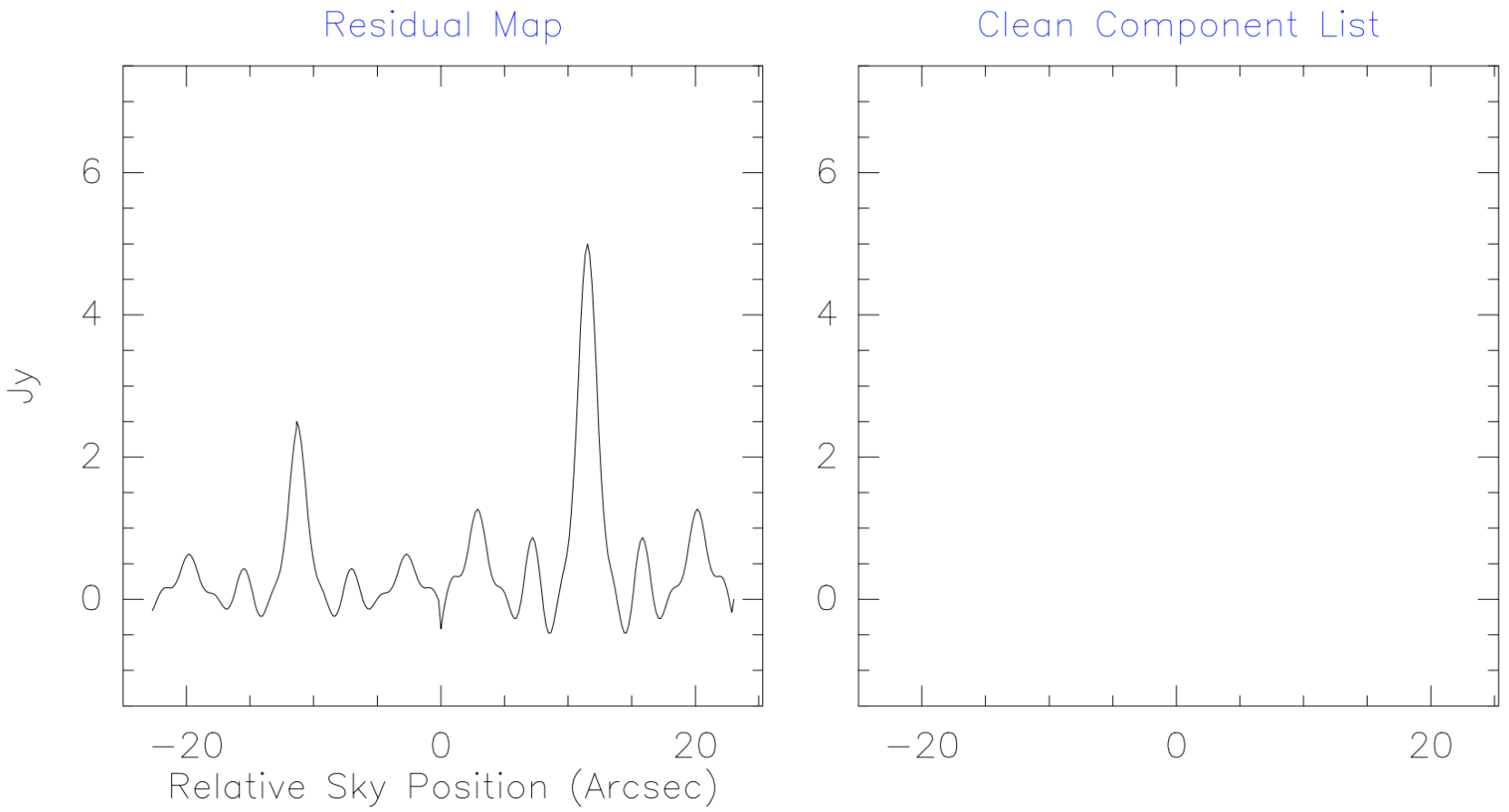

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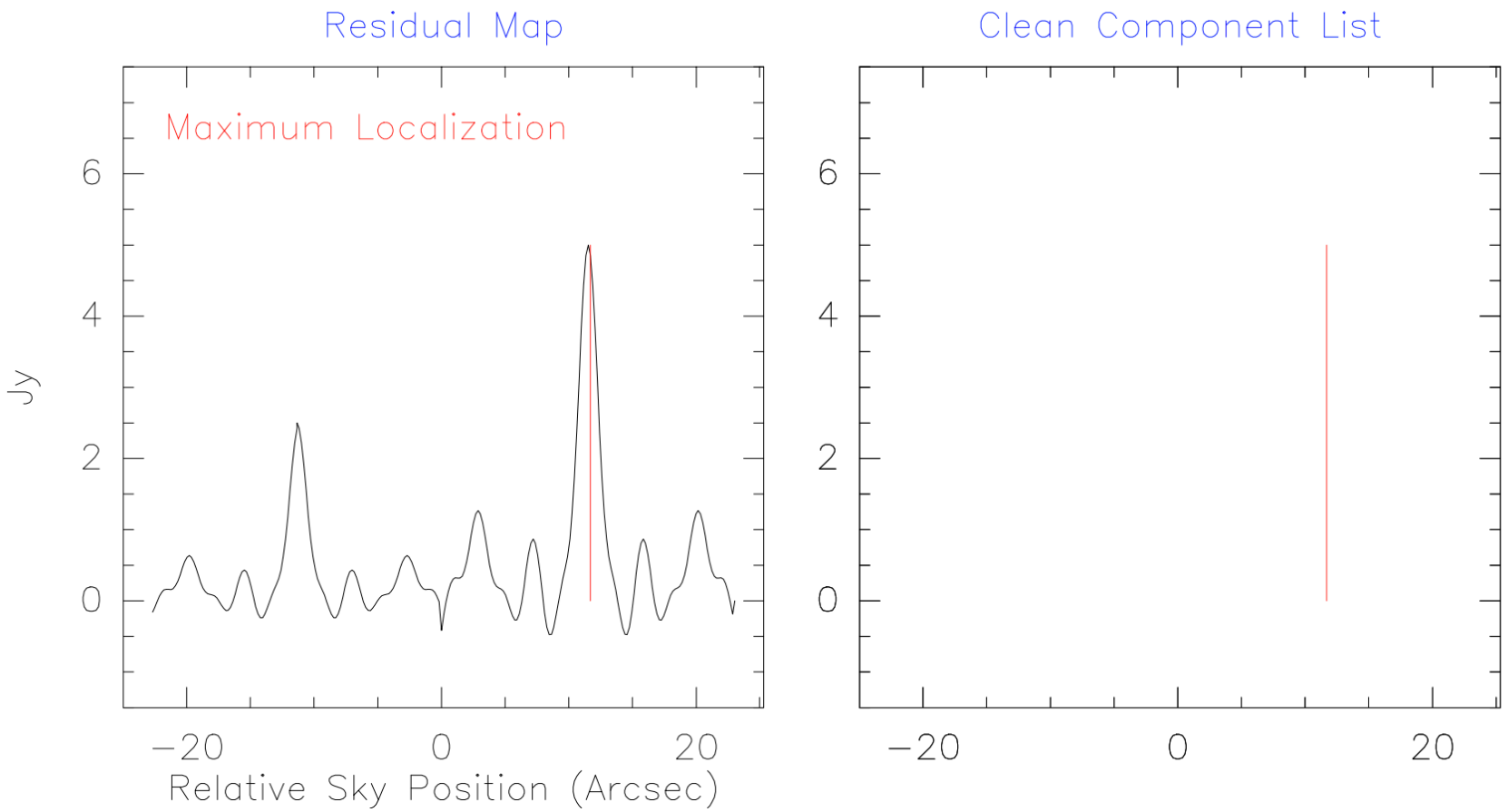

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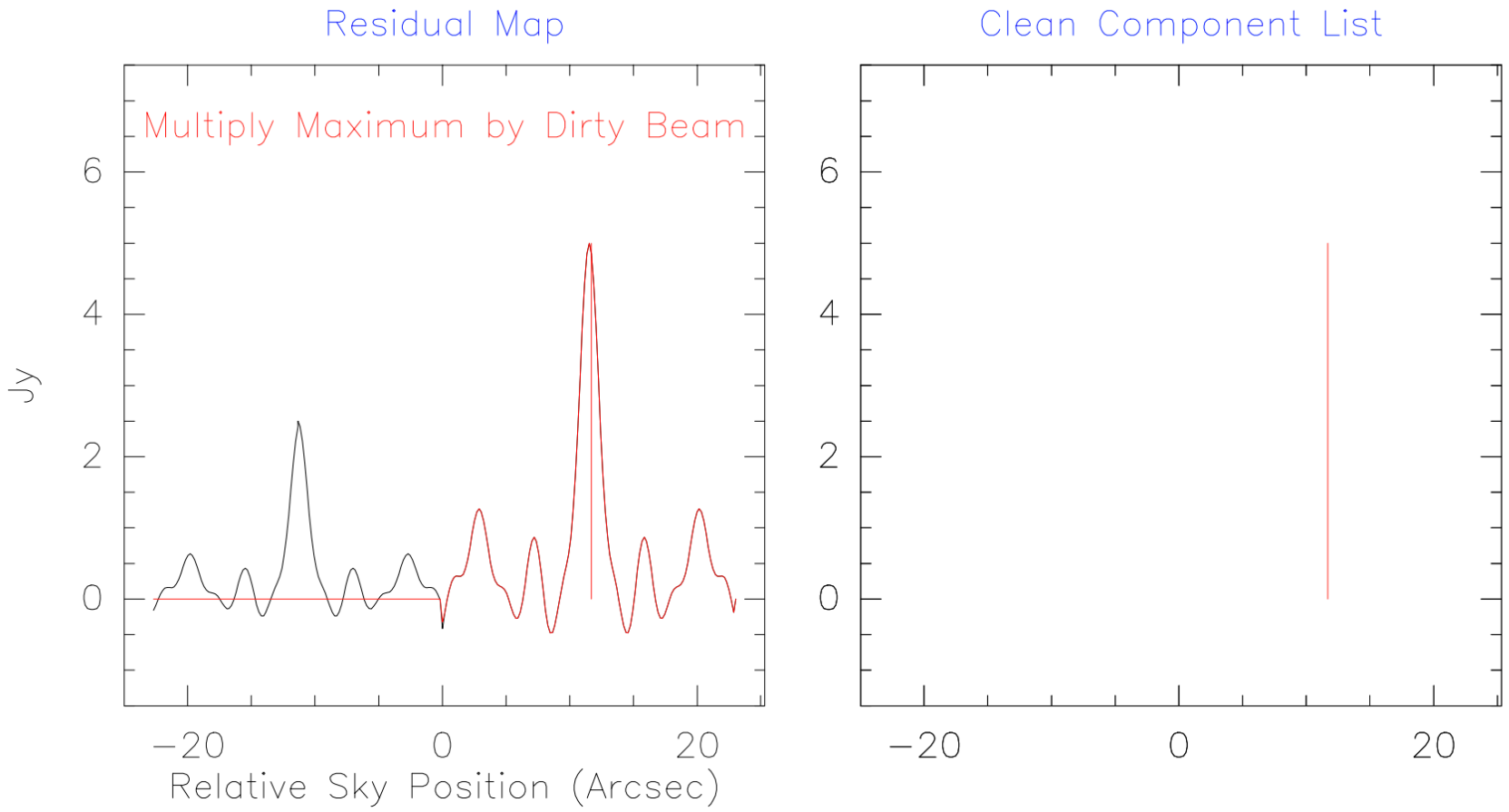

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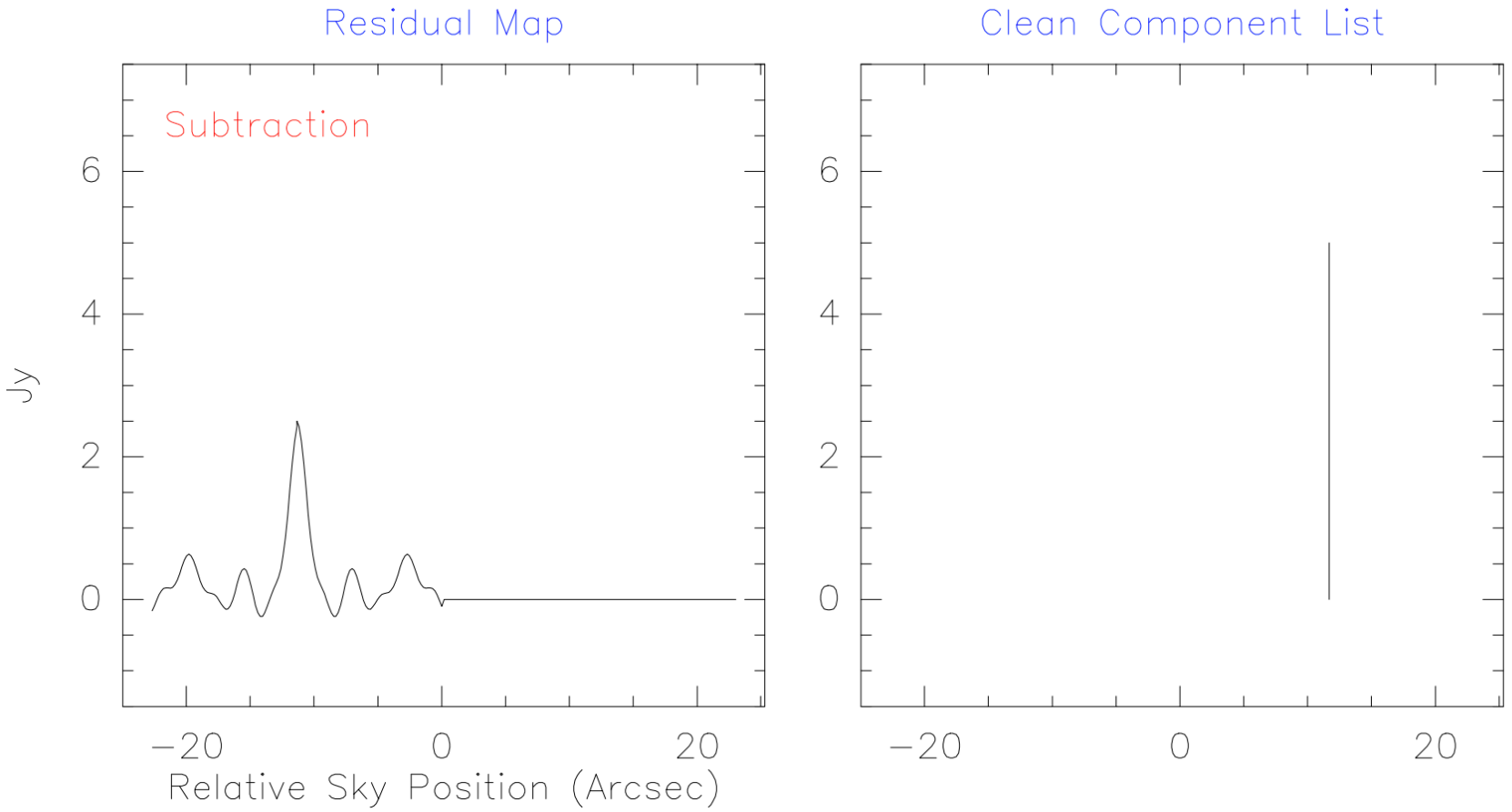

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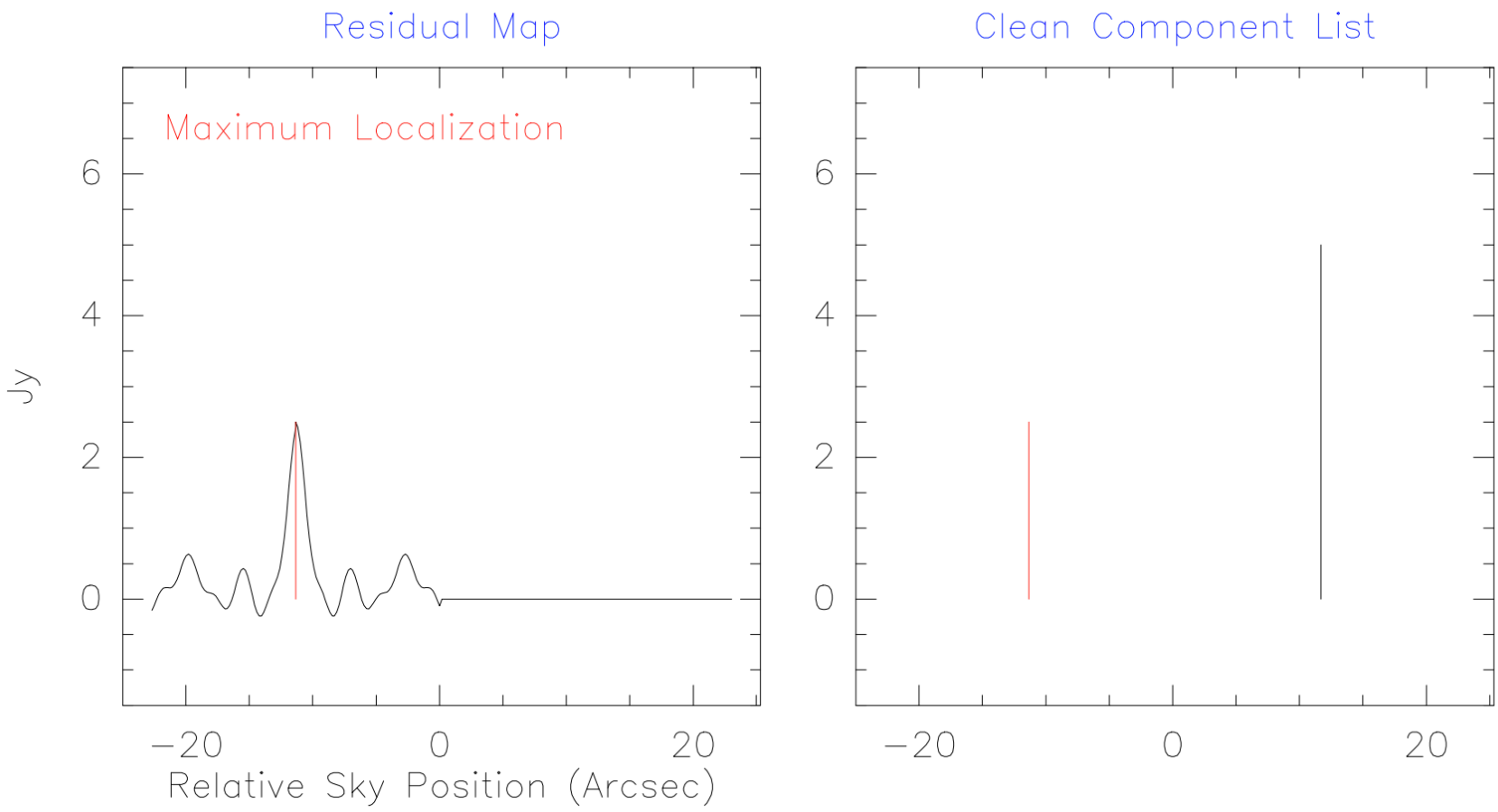

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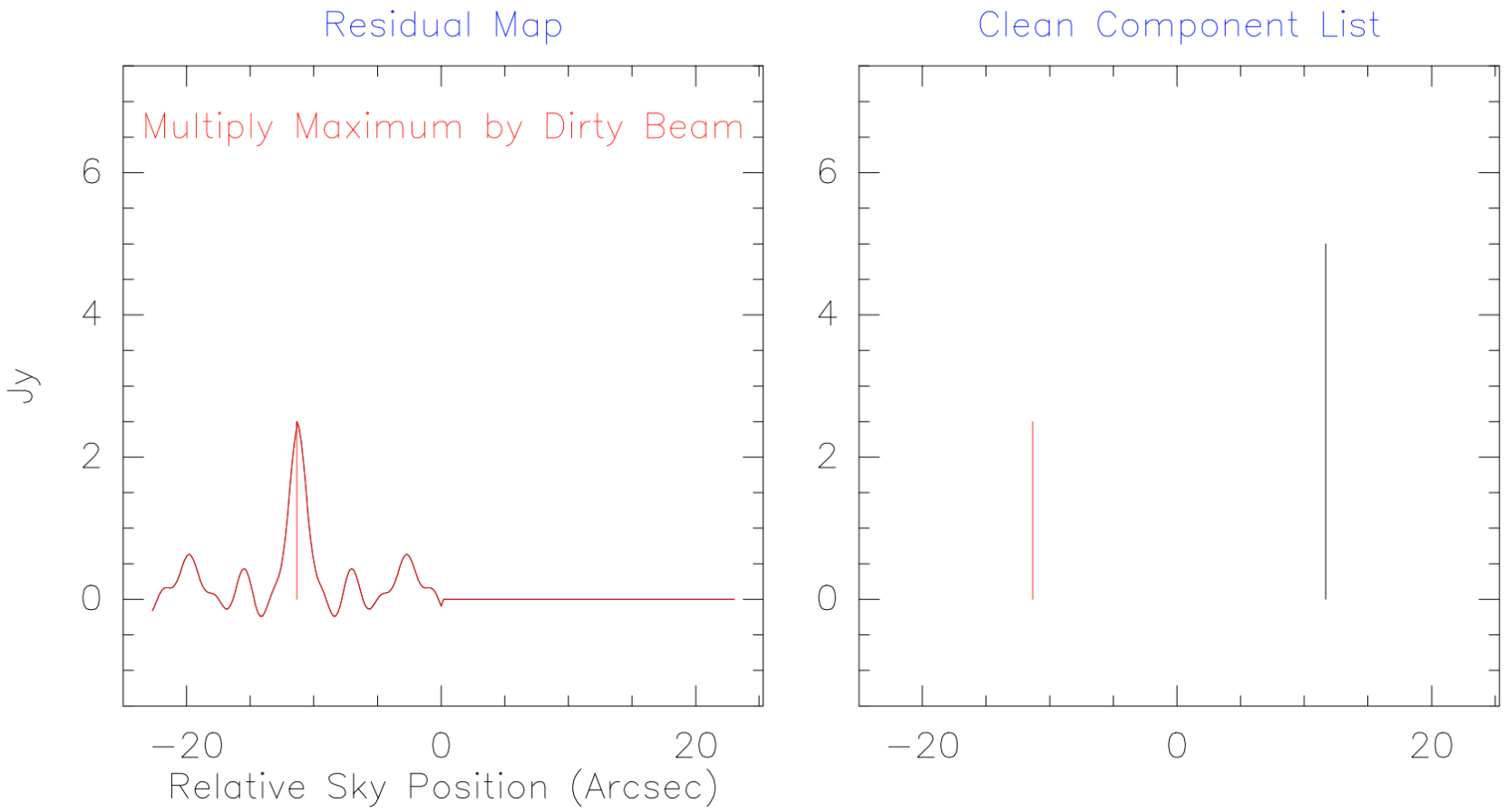

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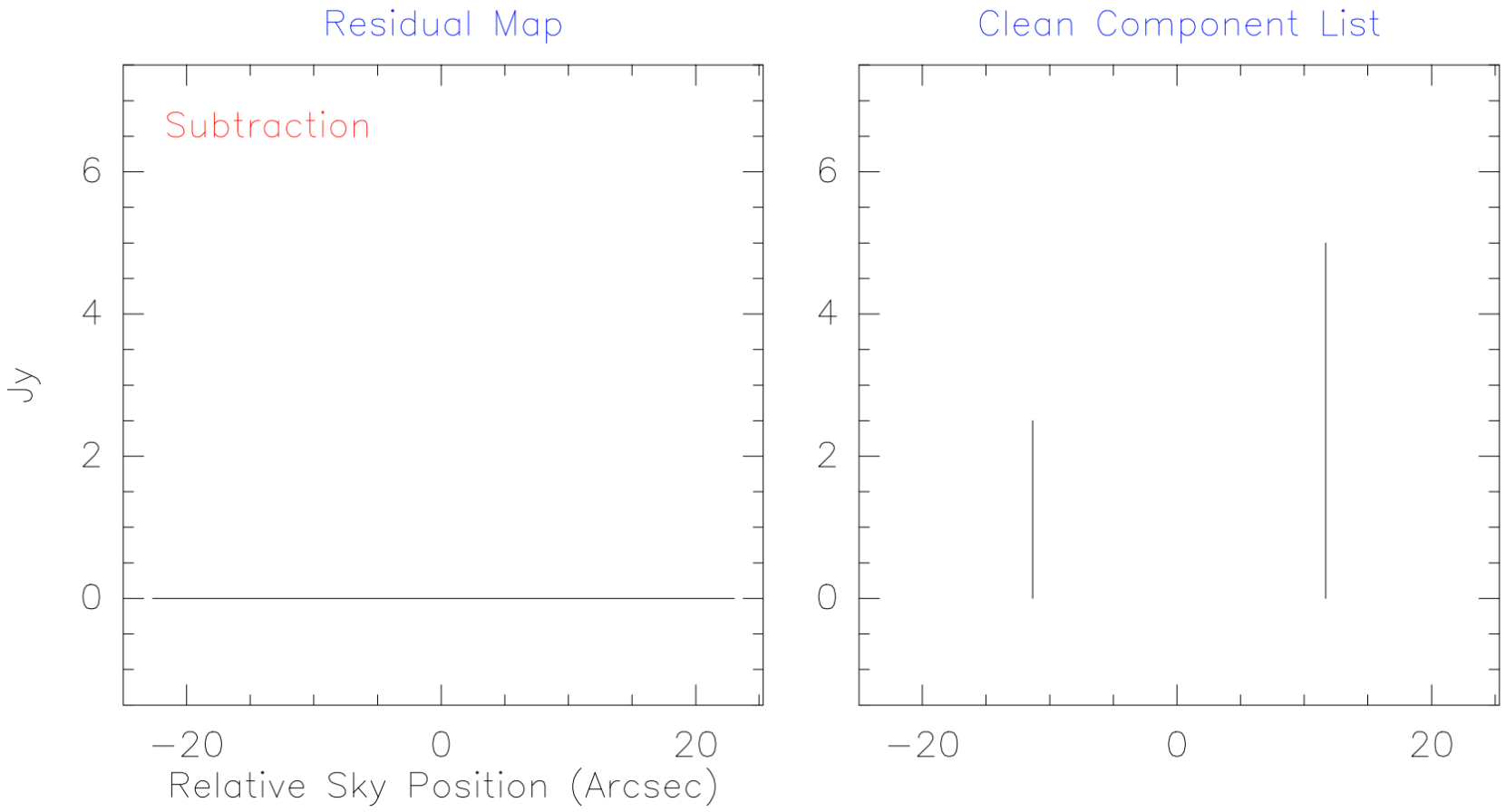

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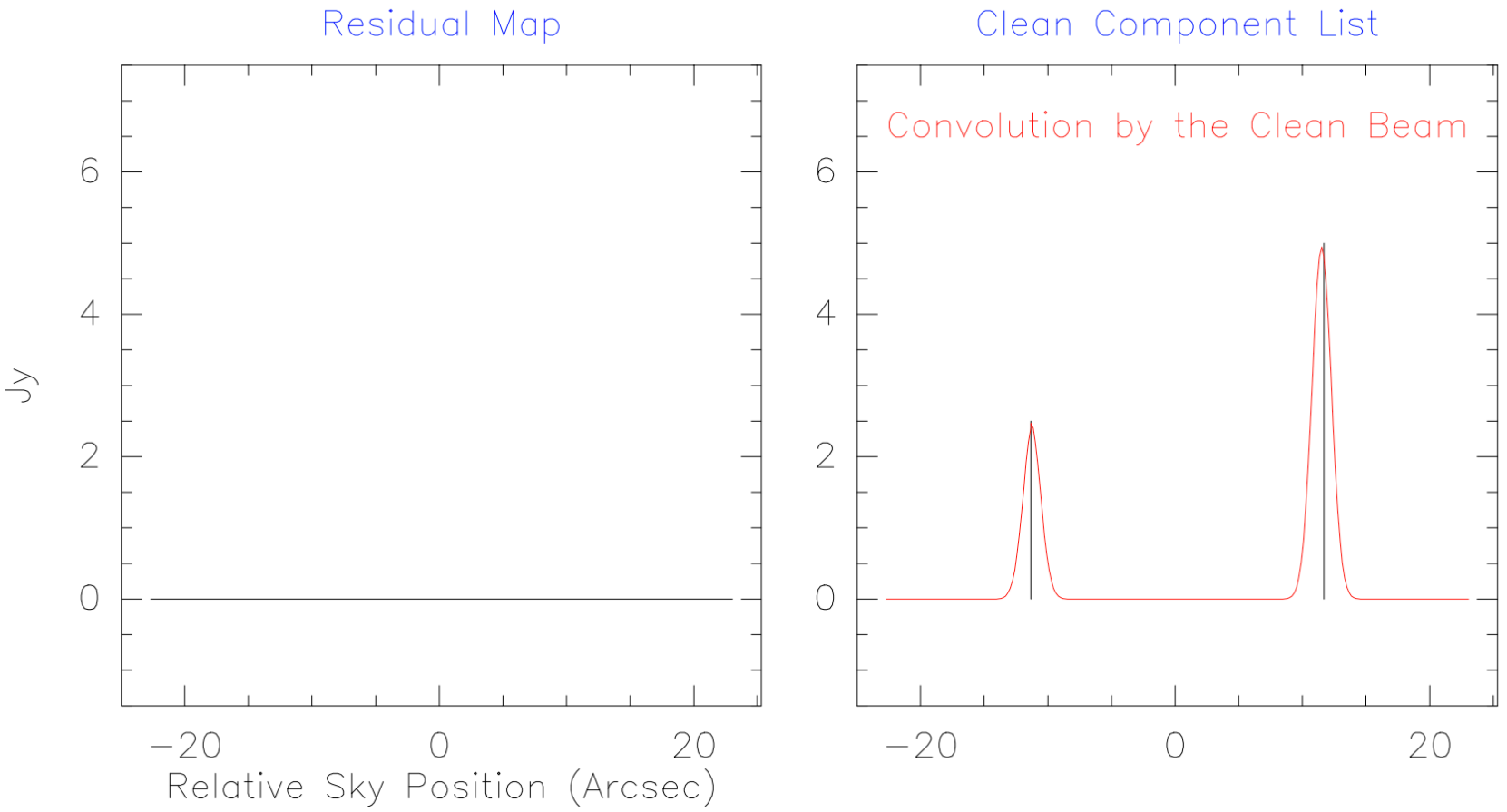

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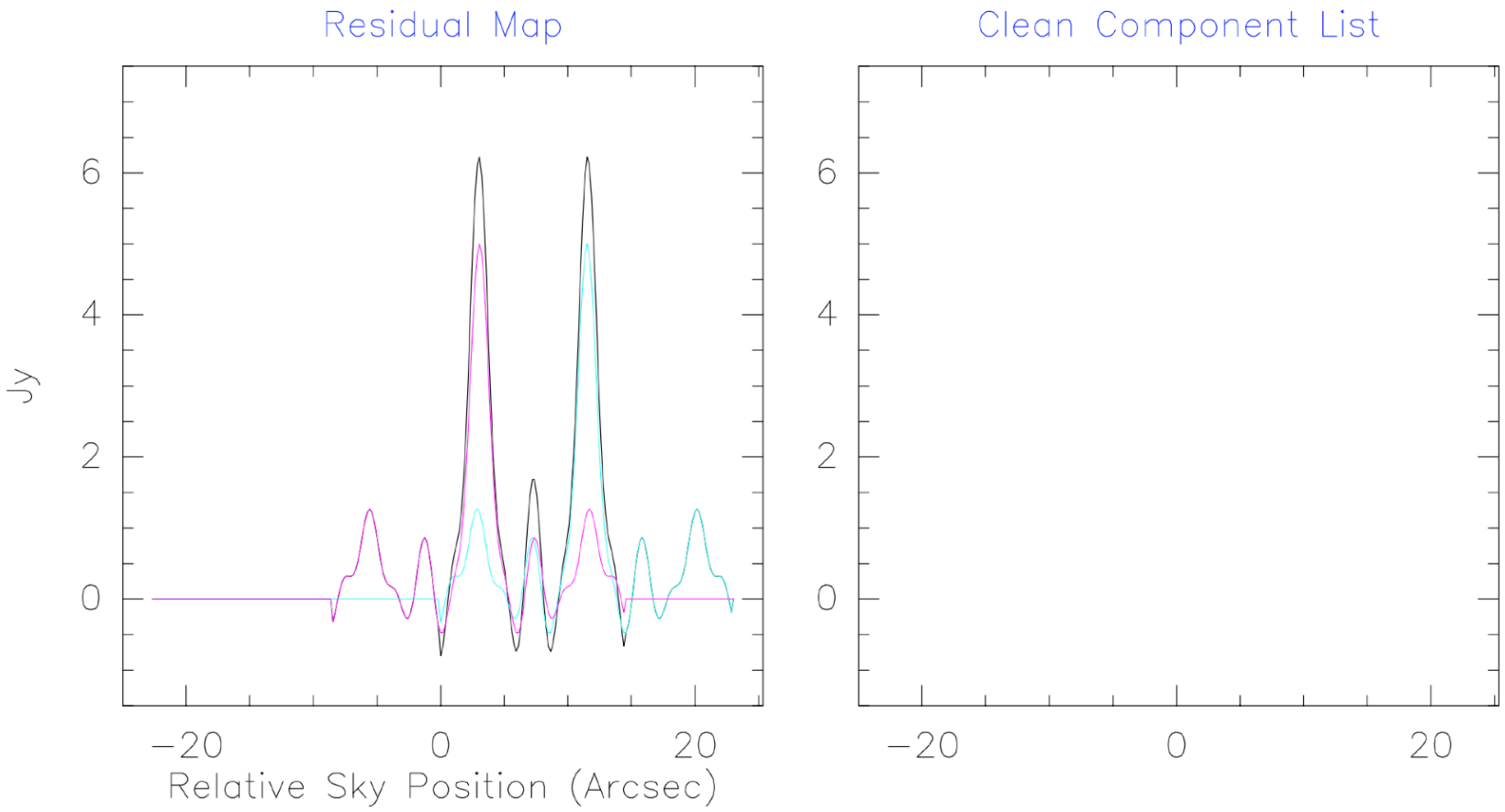

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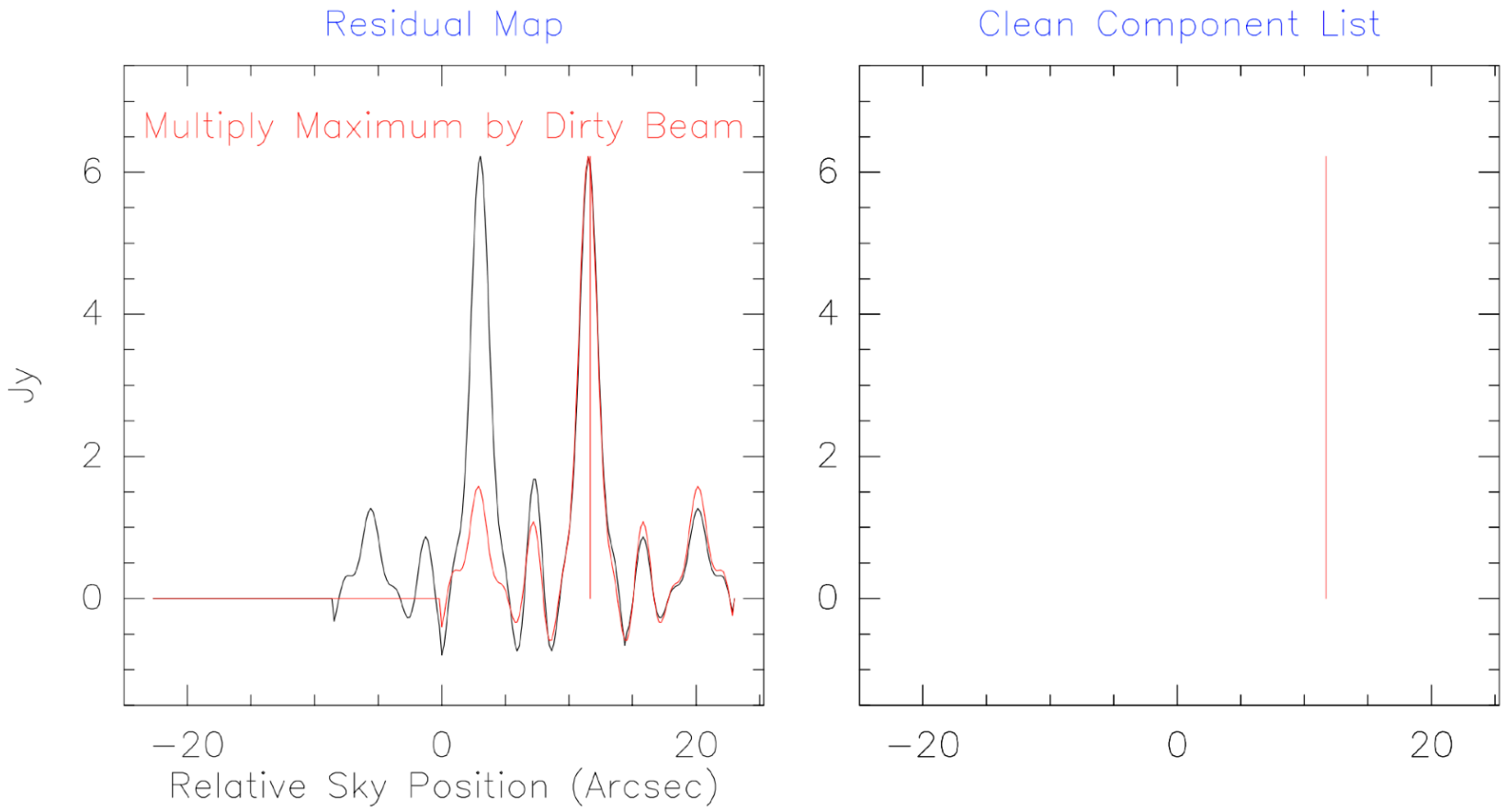

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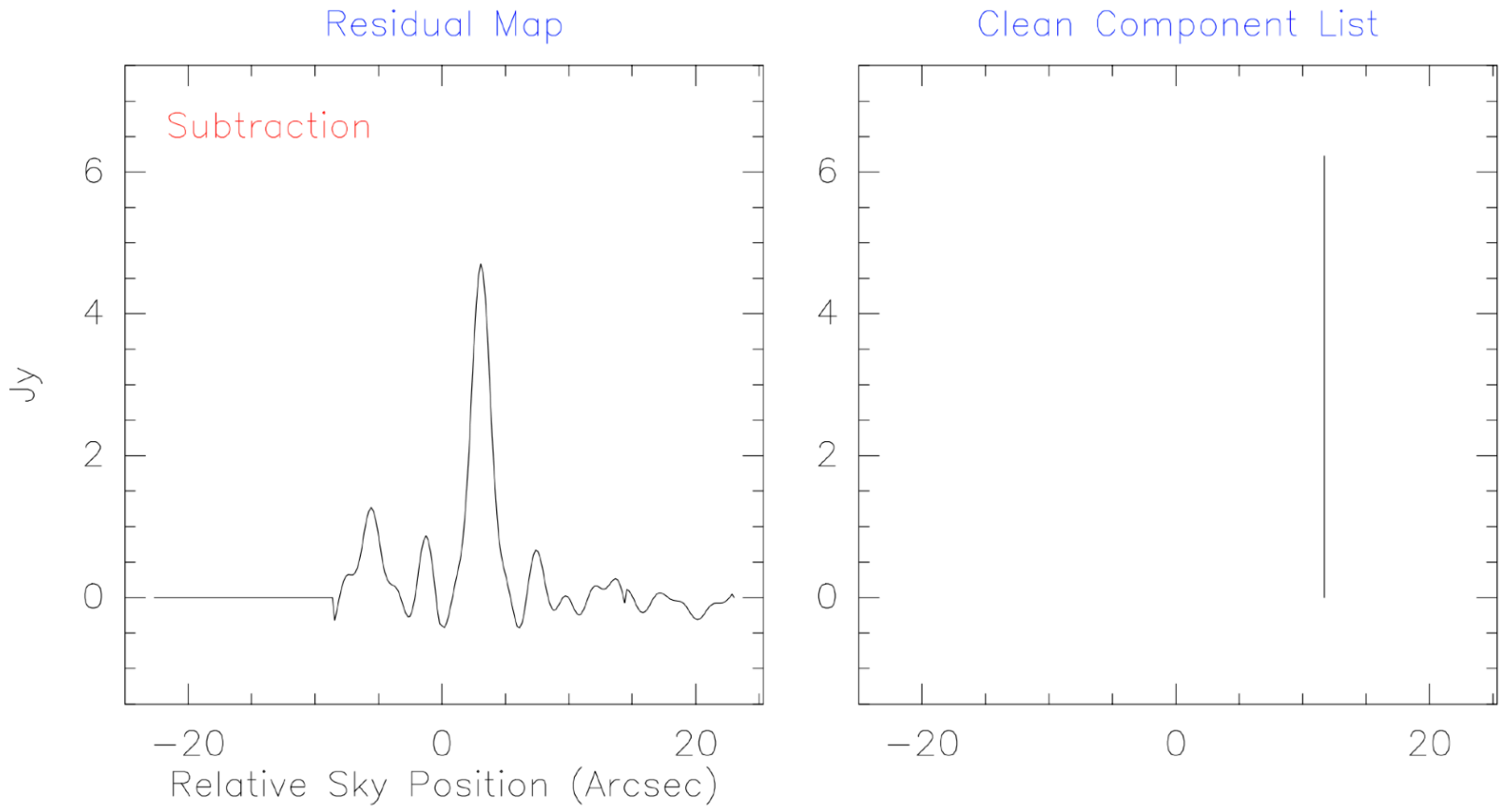

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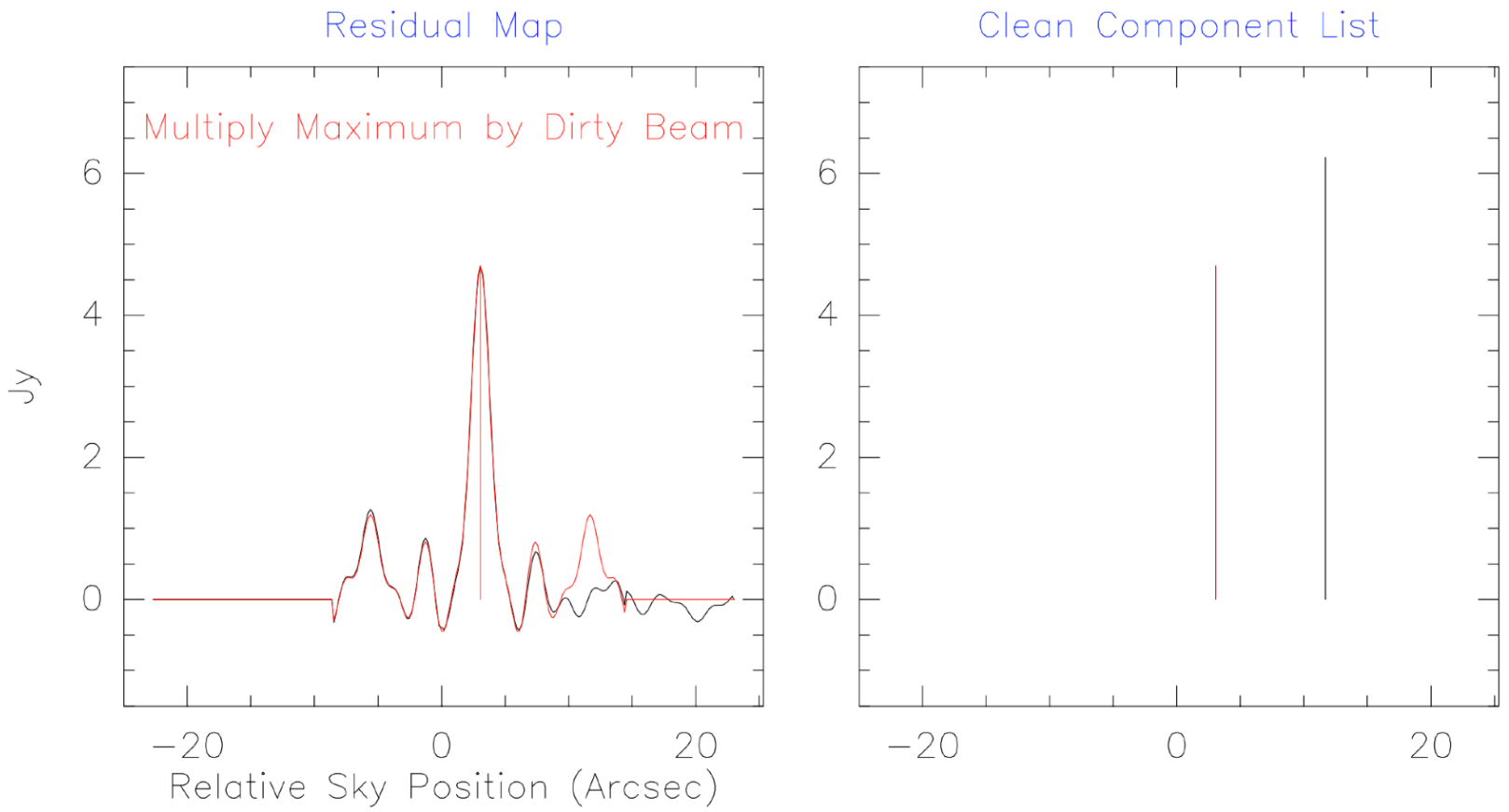

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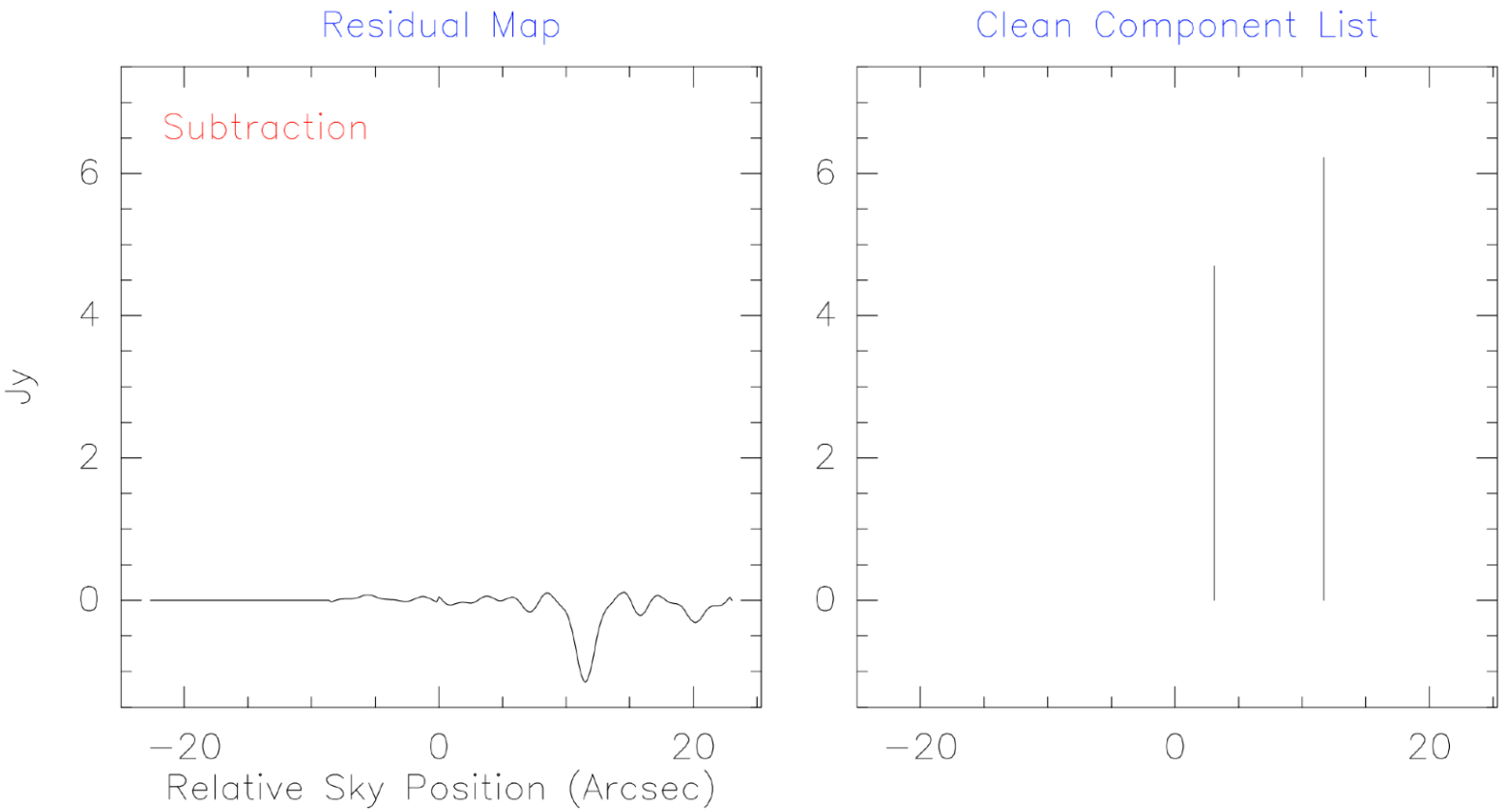


Convergence:

Too superficial cleaning ⇒ Approximate results.

Too deep cleaning ⇒ Divergence.

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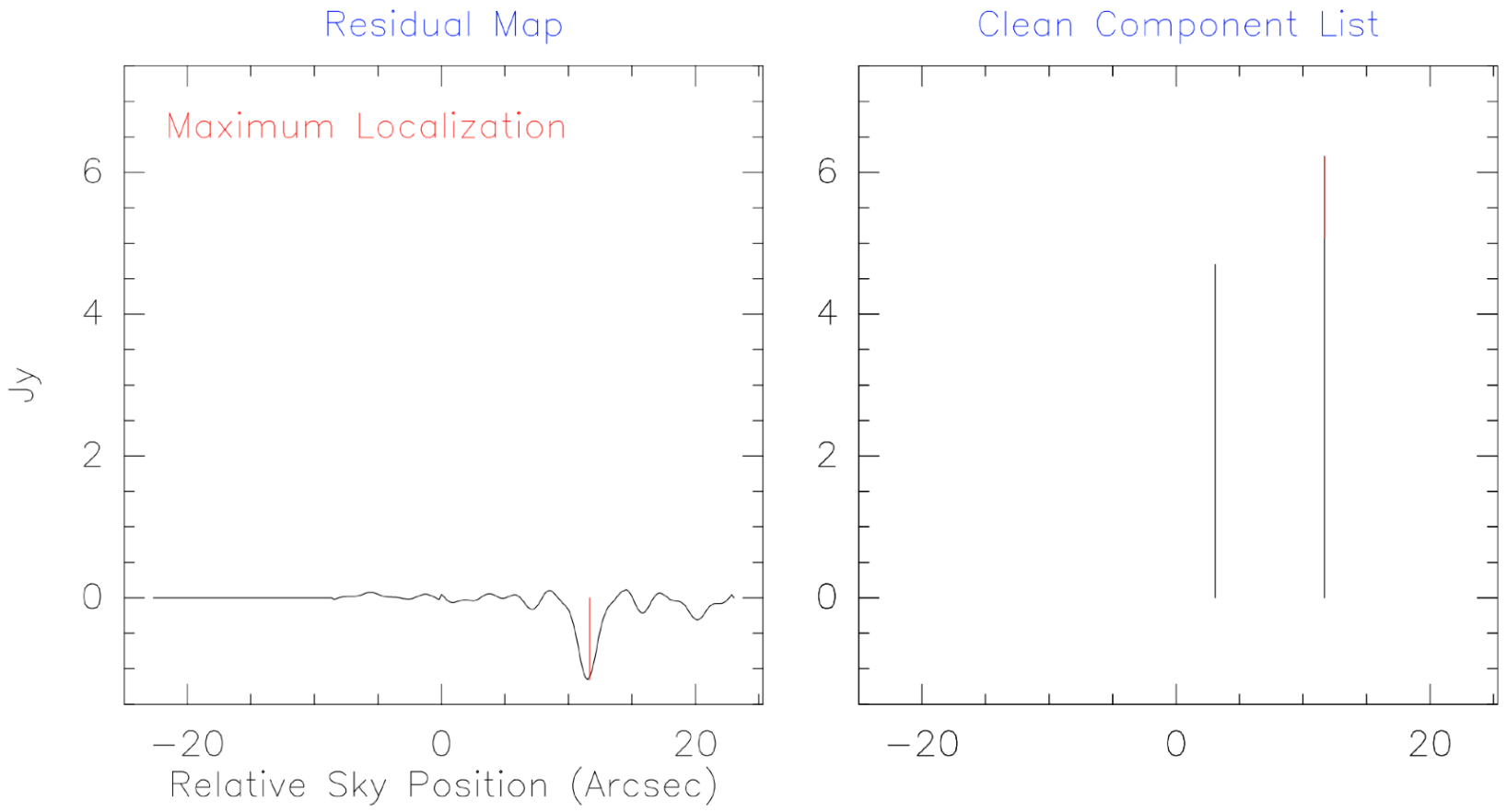
Negative clean components are mandatory.



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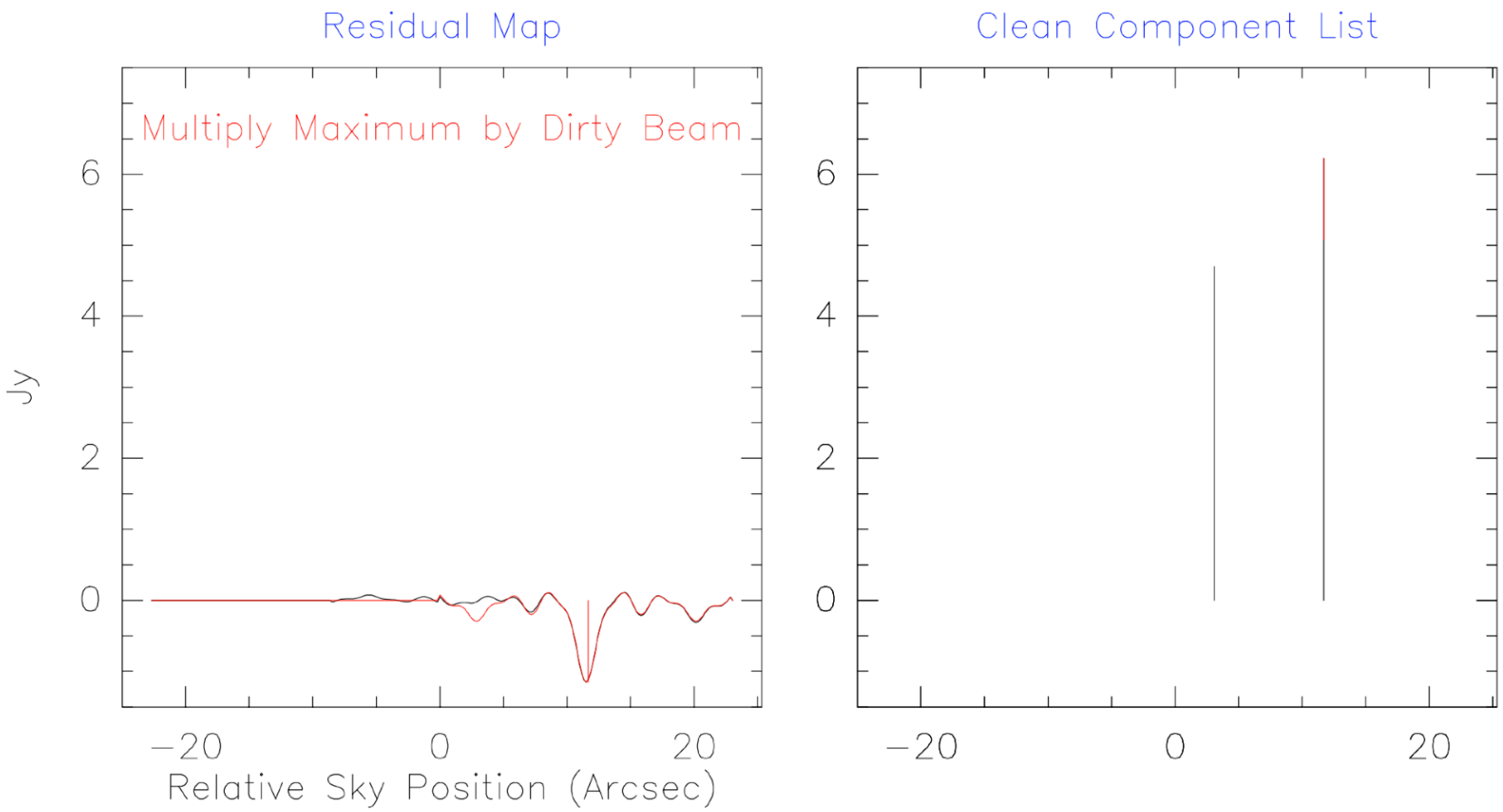

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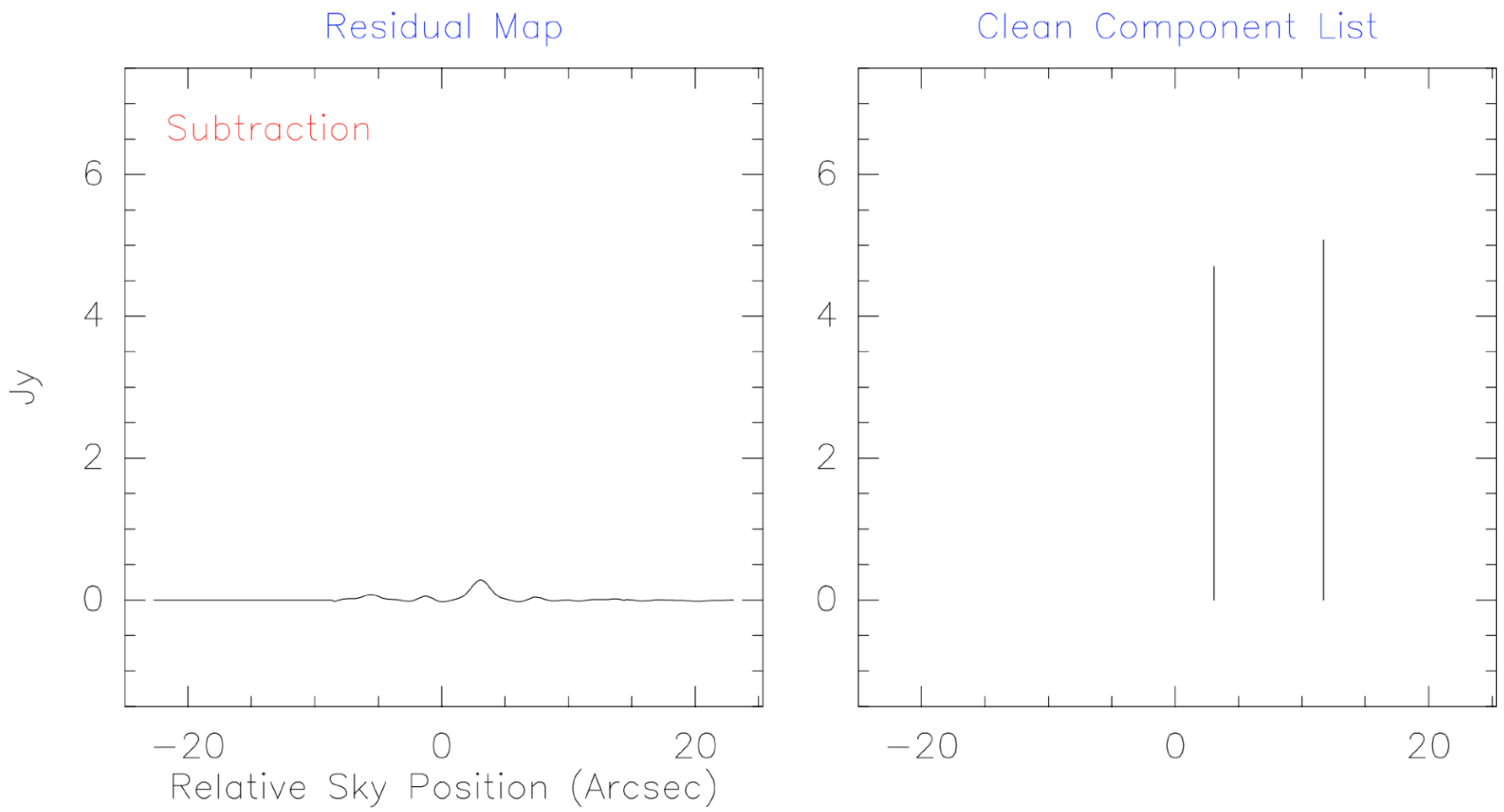

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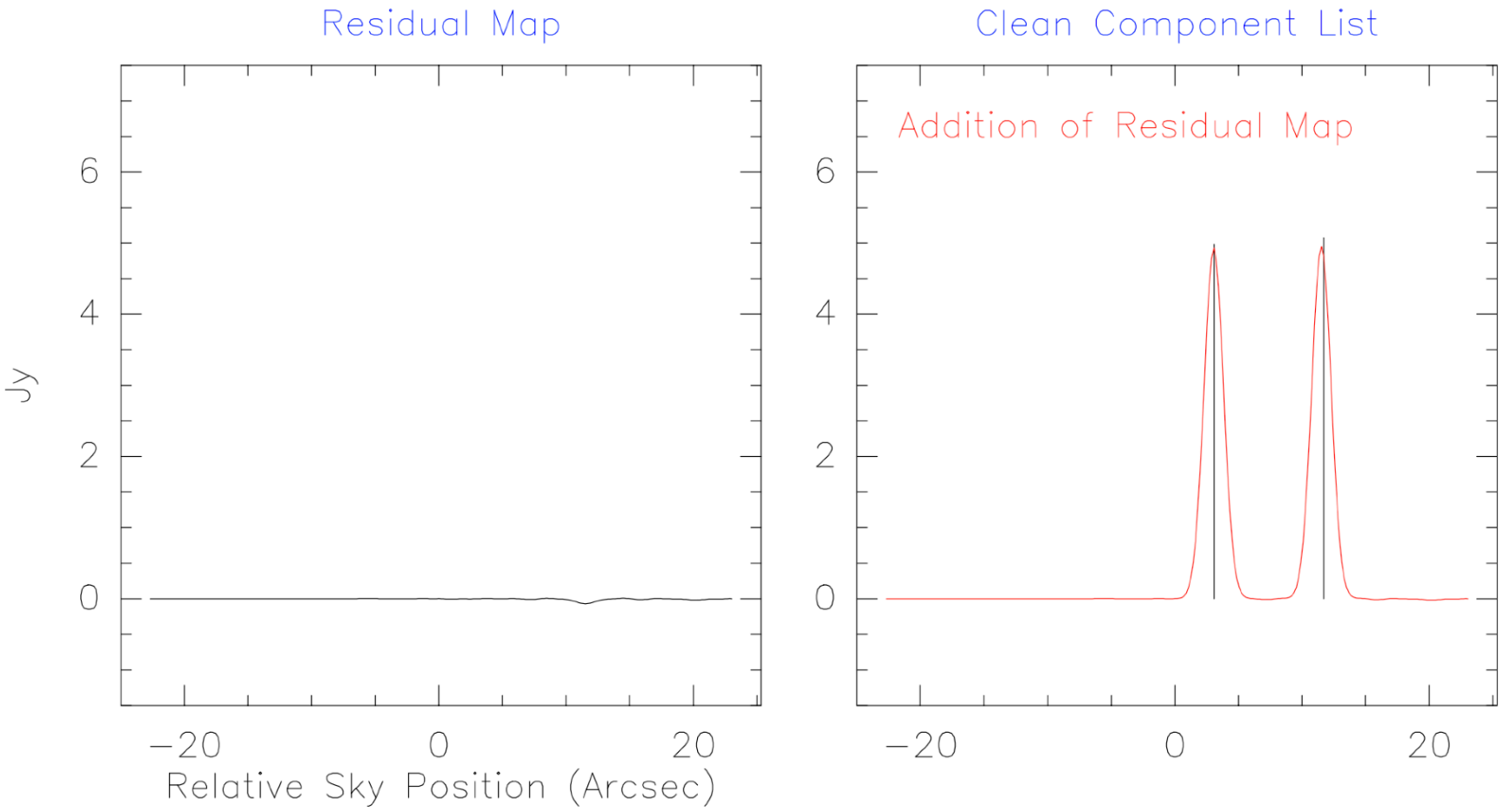

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