HBA sensitivity problems

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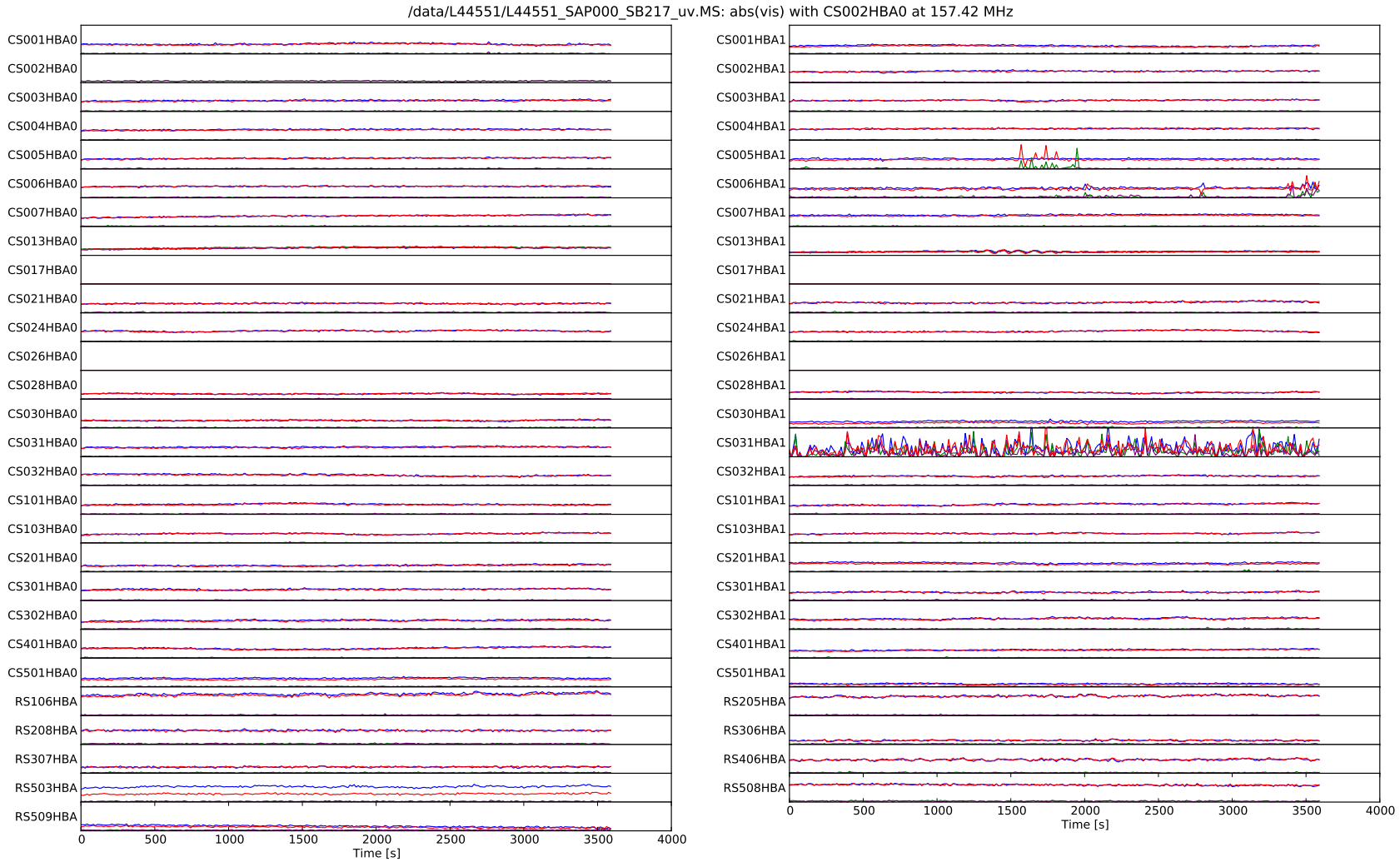
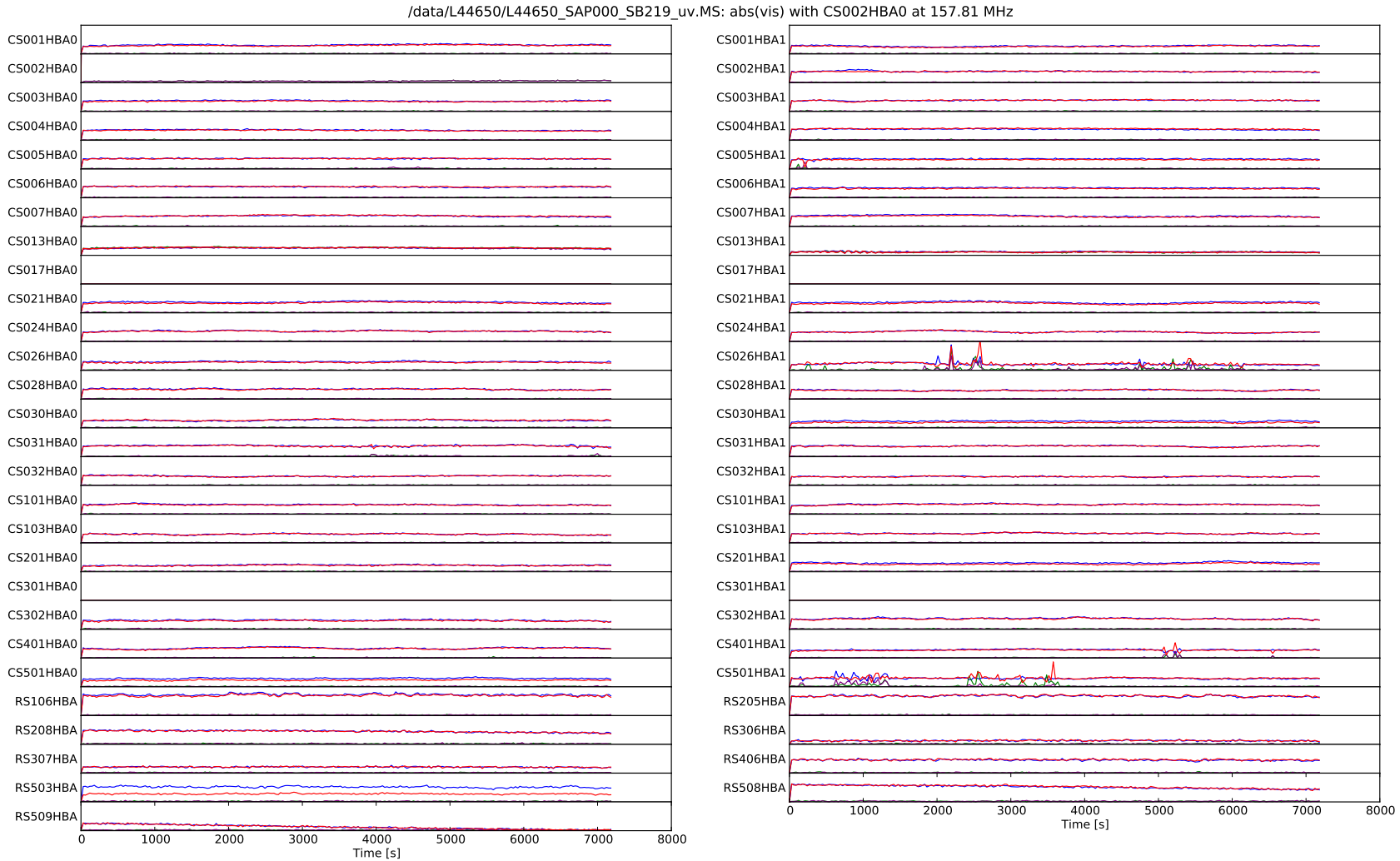
Outline

1. HBA sensitivity problems
2. One faulty RSP board
3. Two faulty RSP boards
4. Two faulty RSP boards
5. What can holography do?
6. Now what?

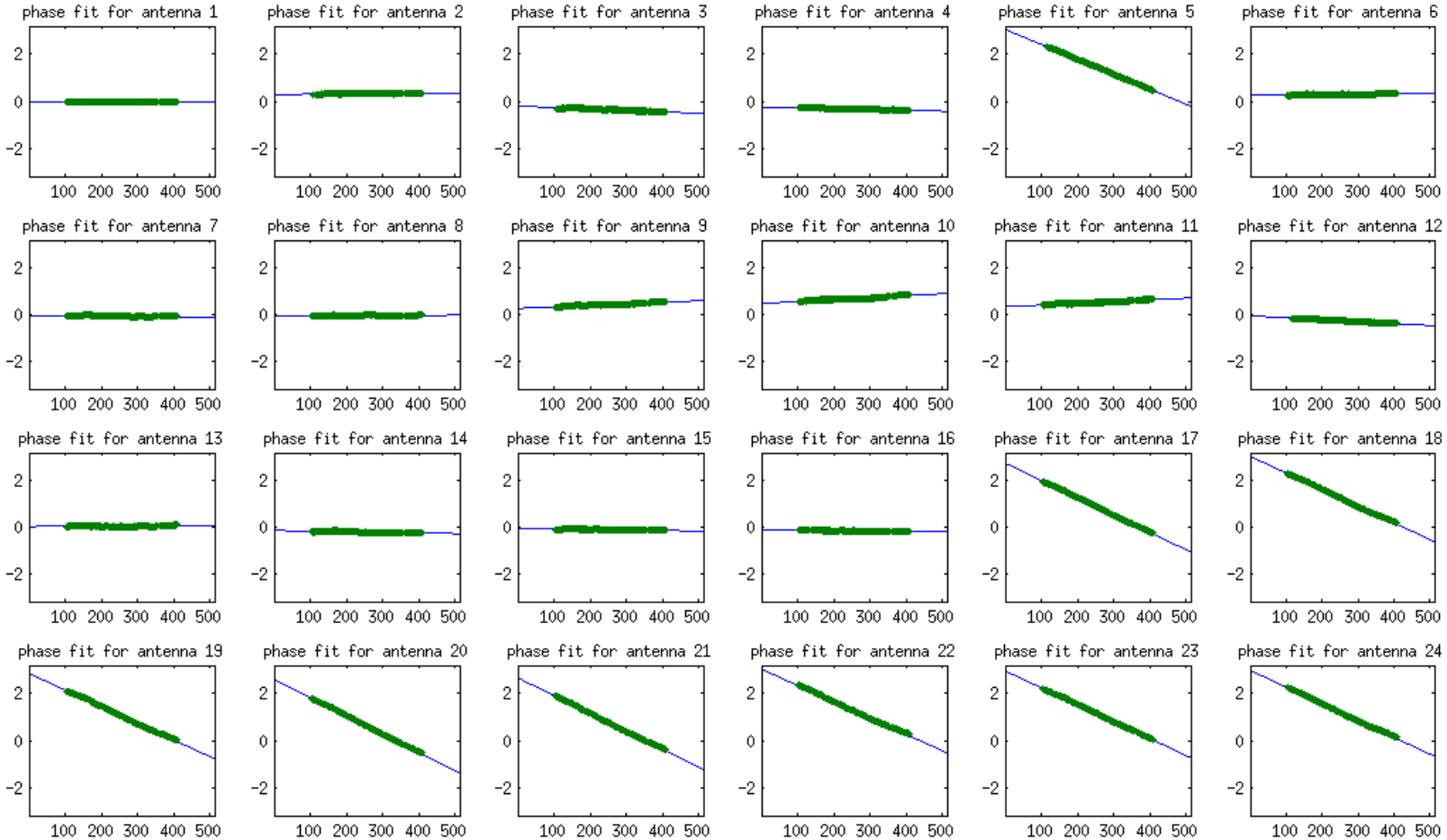
L44551 3C295



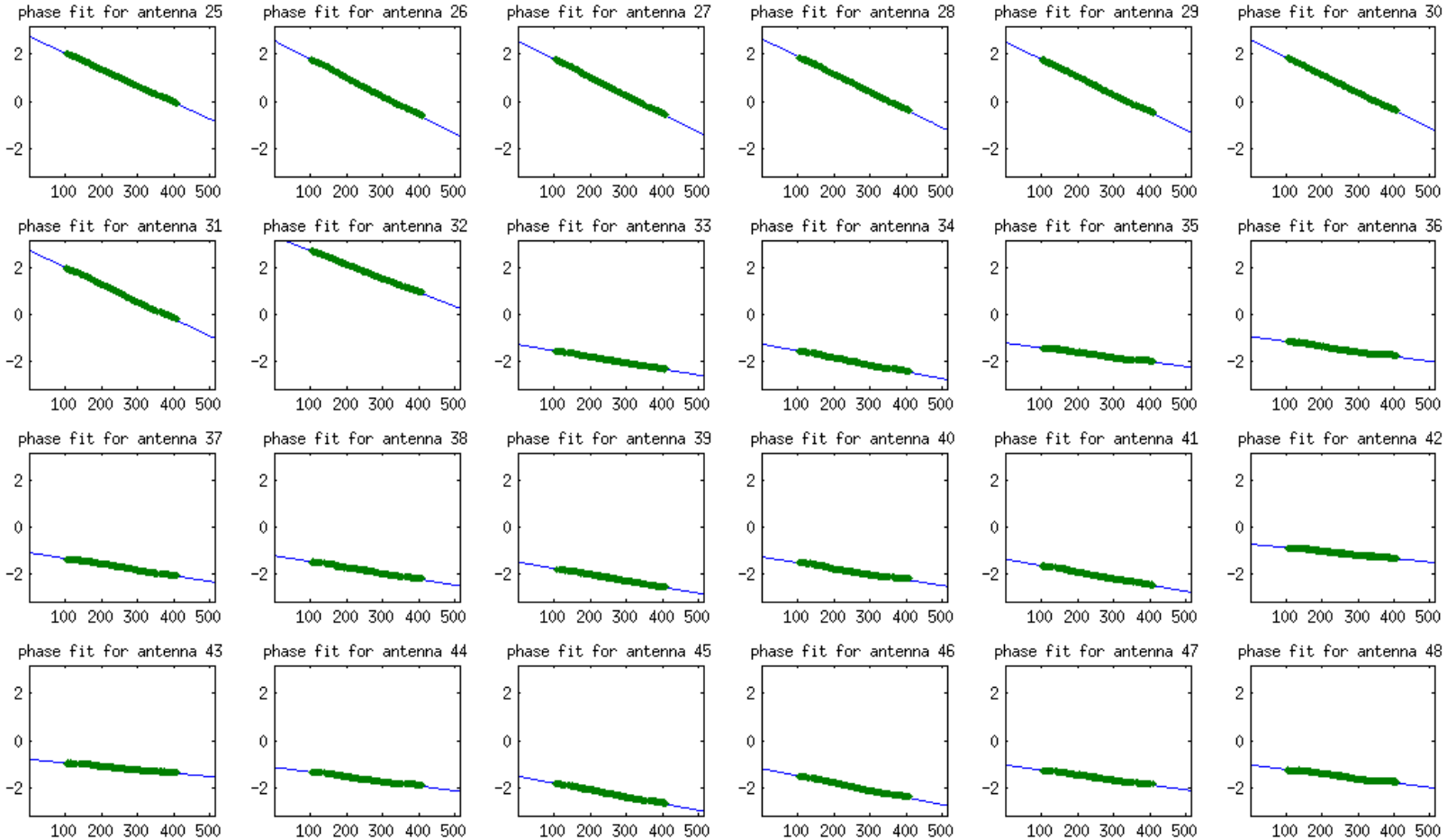
L44650 3C295, CS501& RS306 PPS tuned



5 ns quantization CS013 HBA0 X *M. Eikelboom*



5 ns quantization CS013 HBA1 X *M. Eikelboom*



Other evidence

- Gains *appeared* to be quantized at 157 MHz at 30–35% and 60–70%.
- Gains for some stations fluctuated wildly between observations (Ger de Bruyn).
- Previous problems with PPS synchronization.
- Superterp does not show this issue at all. Very stable.

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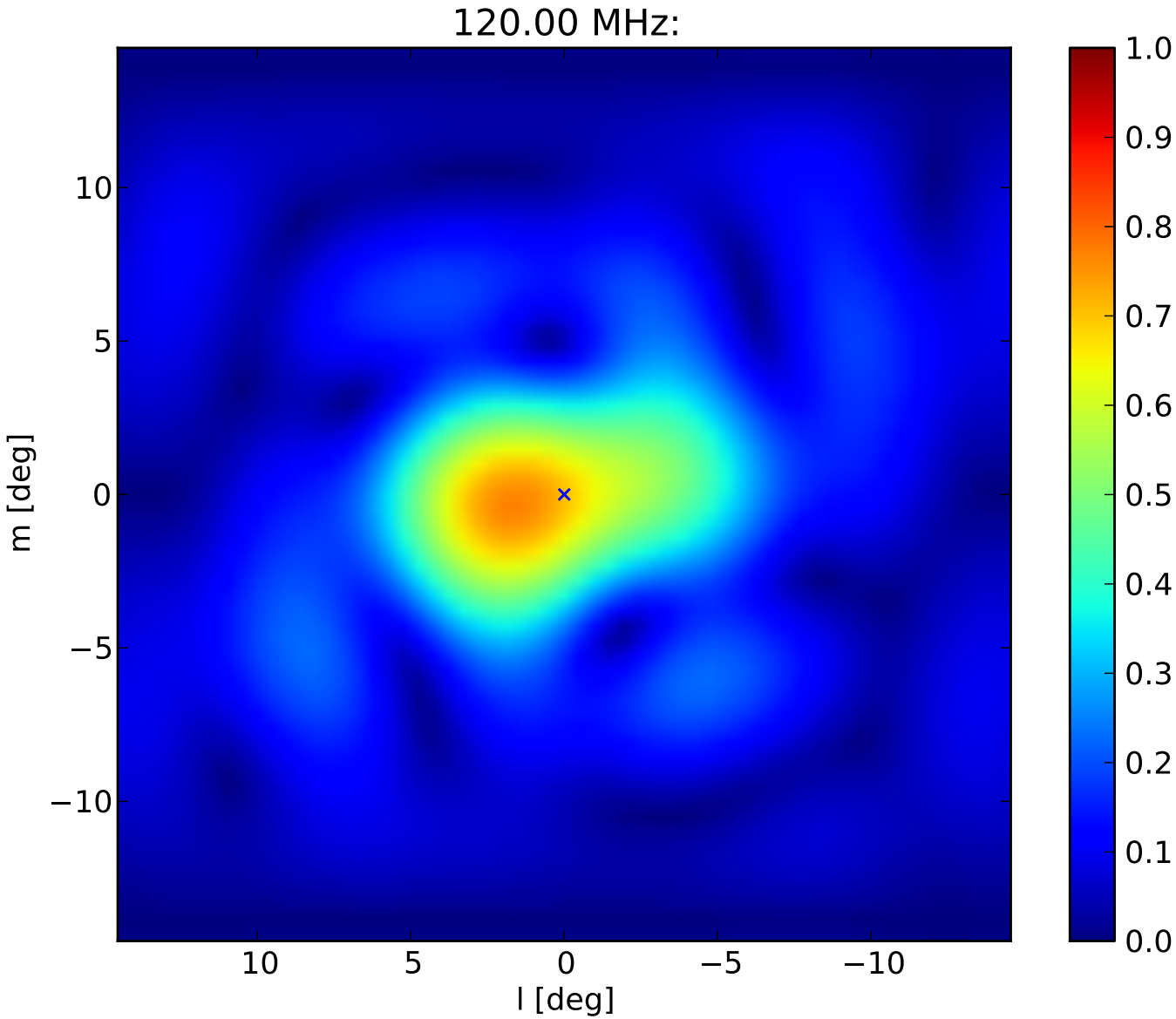

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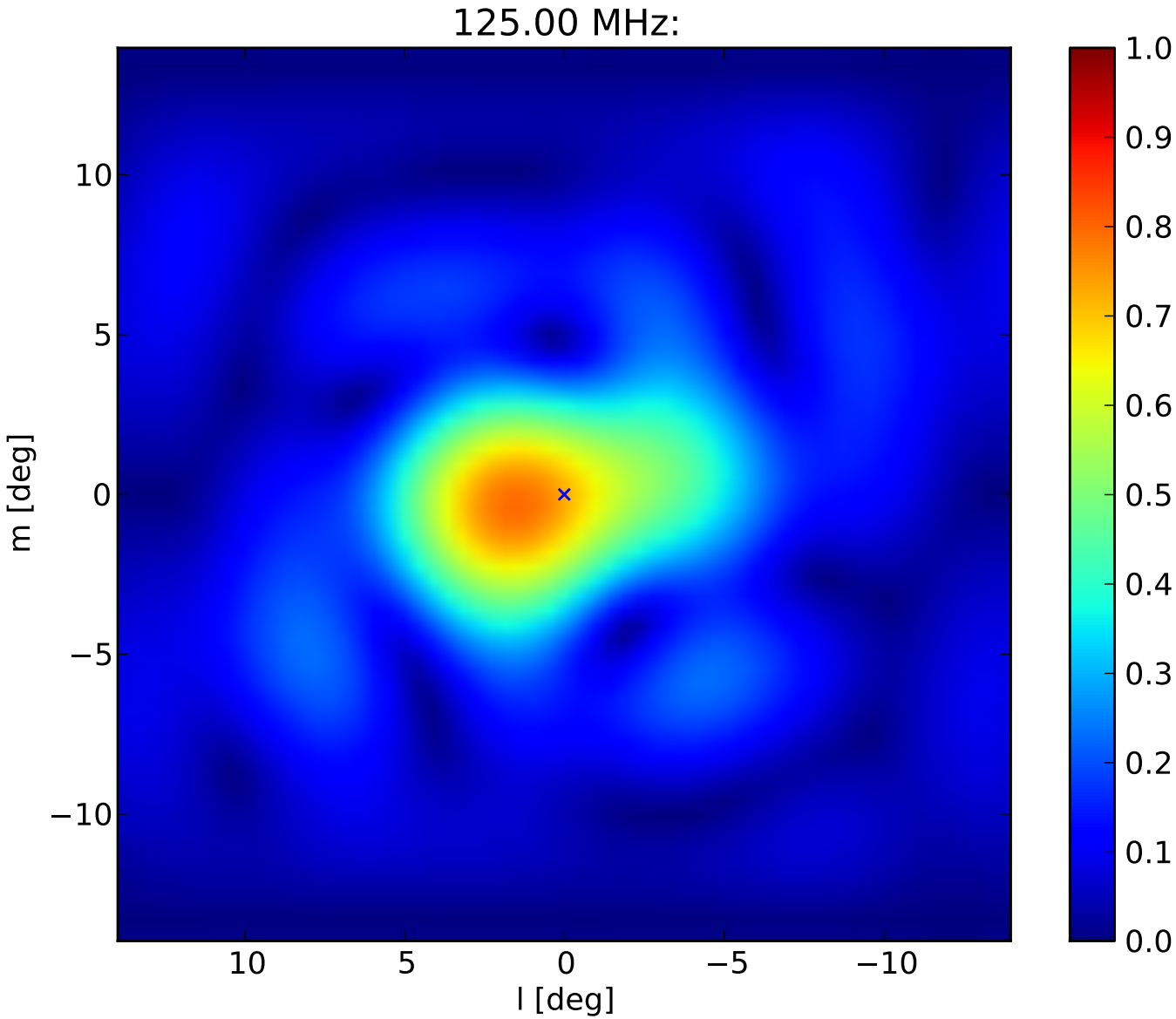

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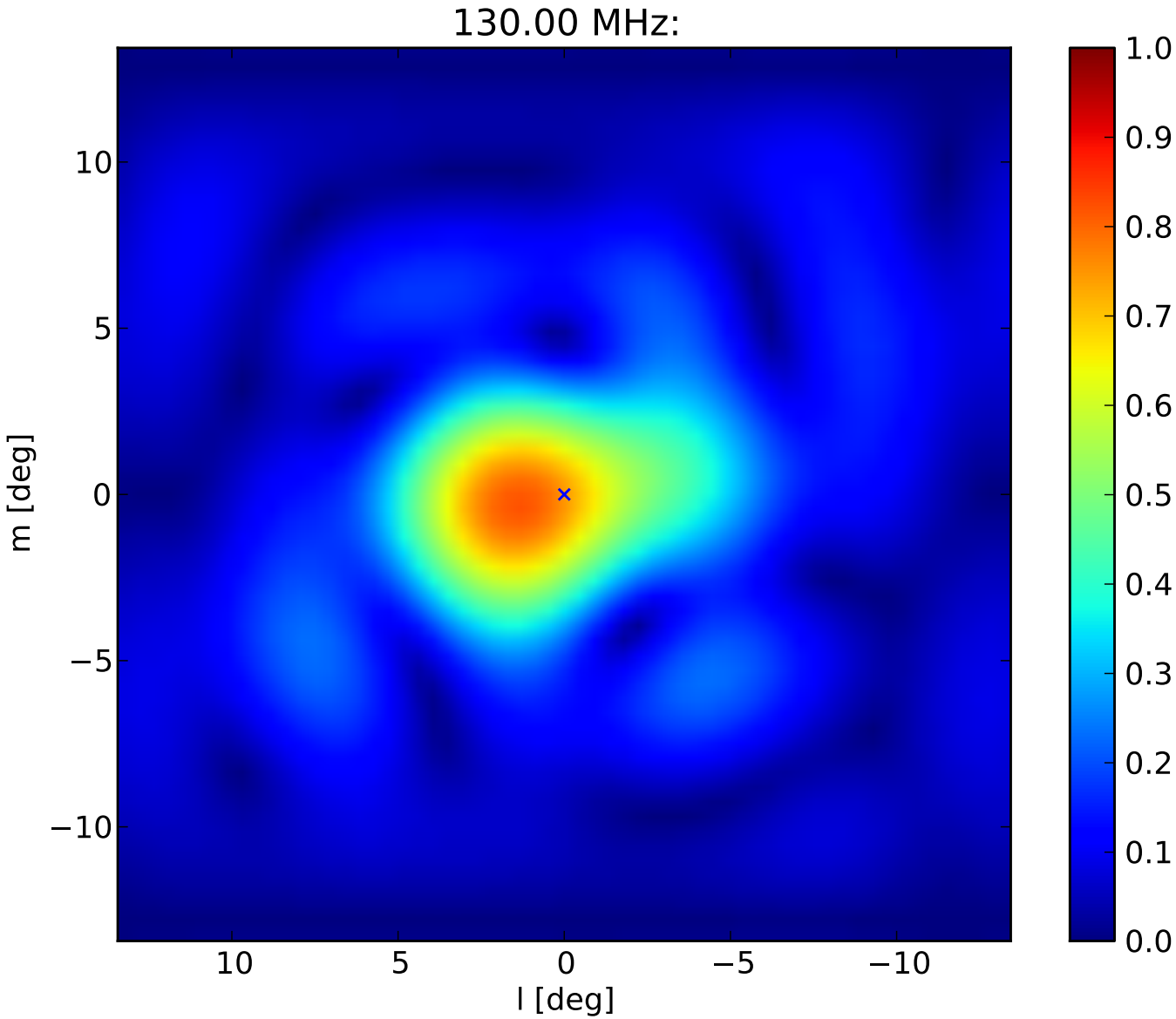

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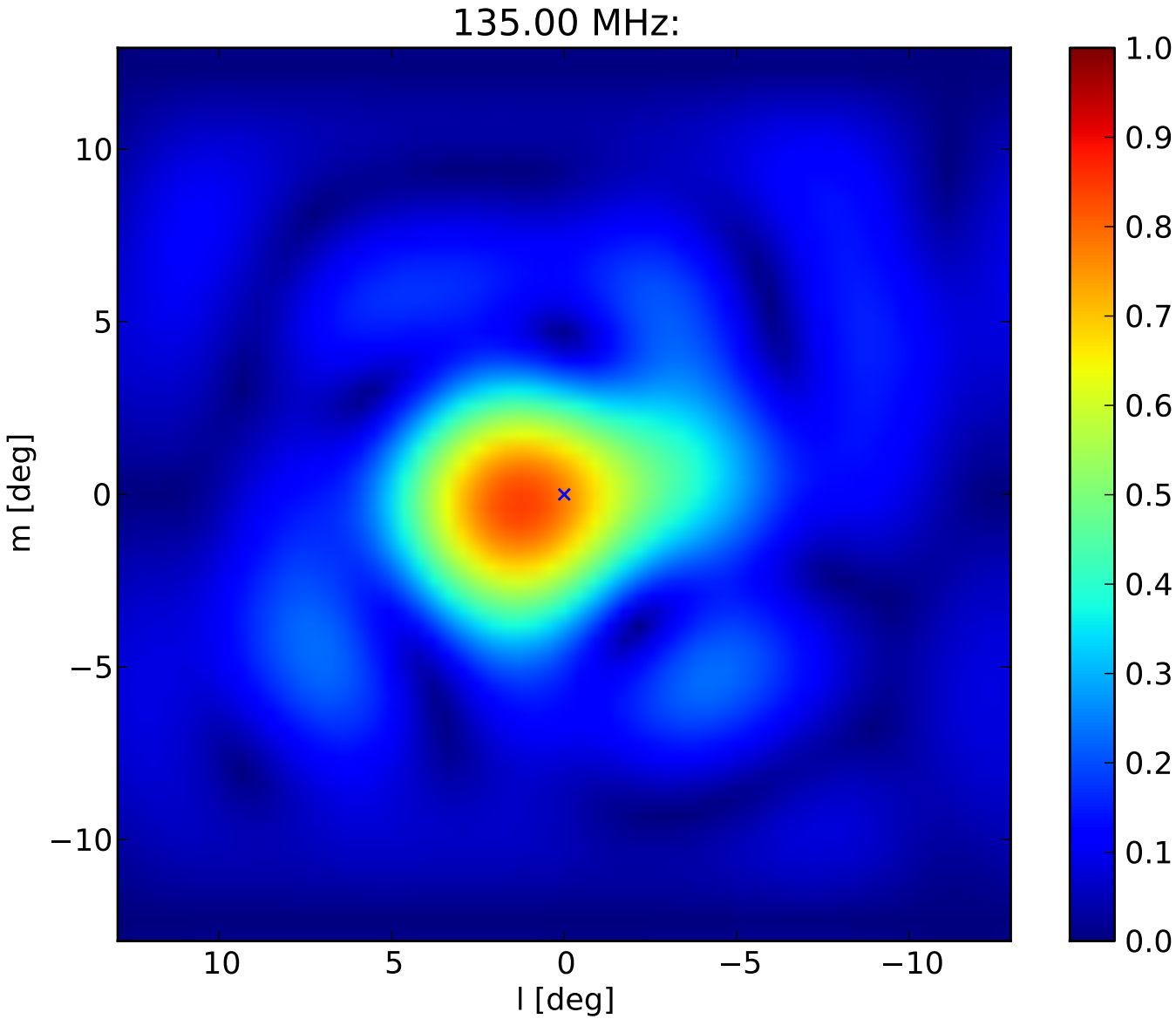

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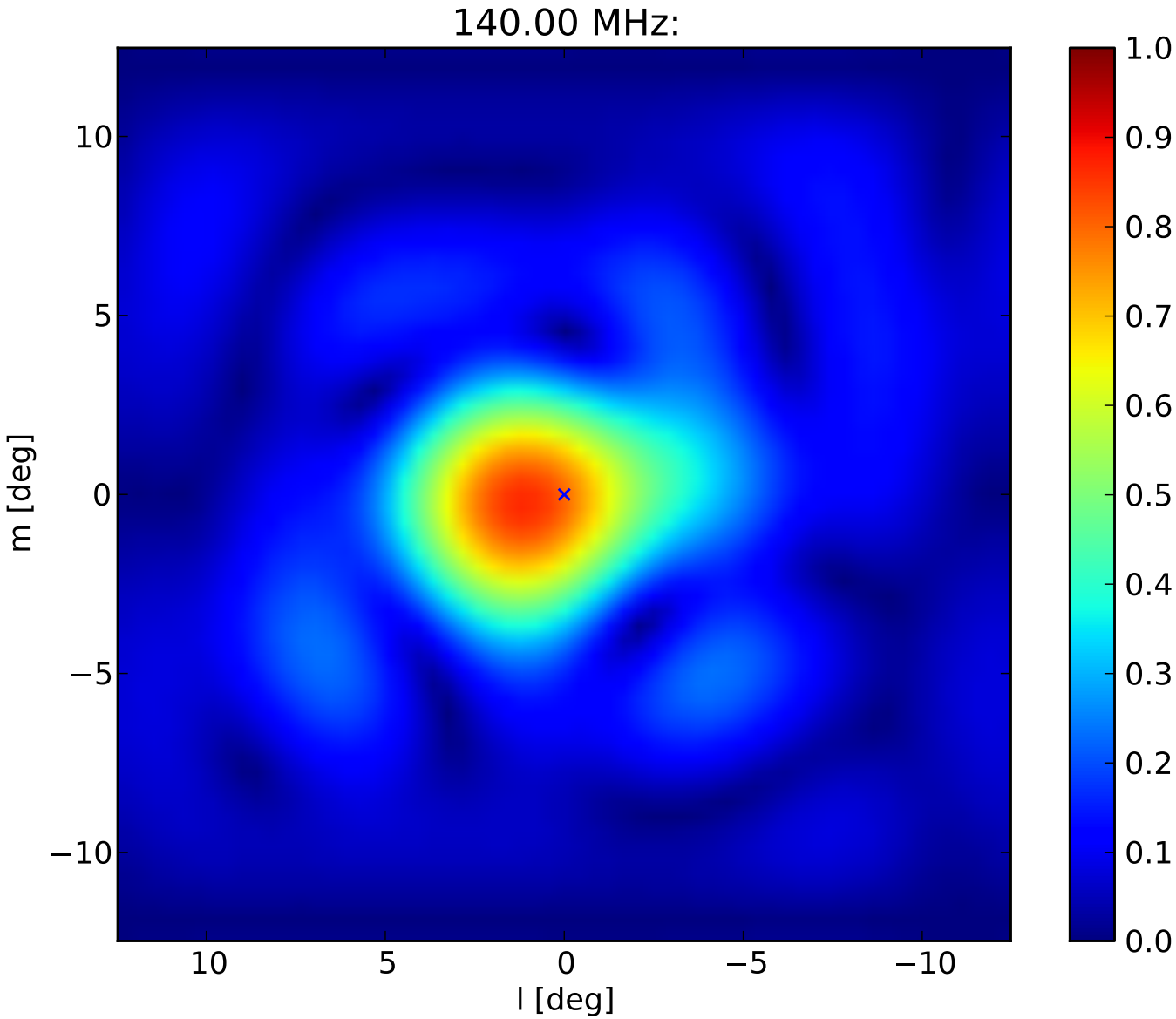

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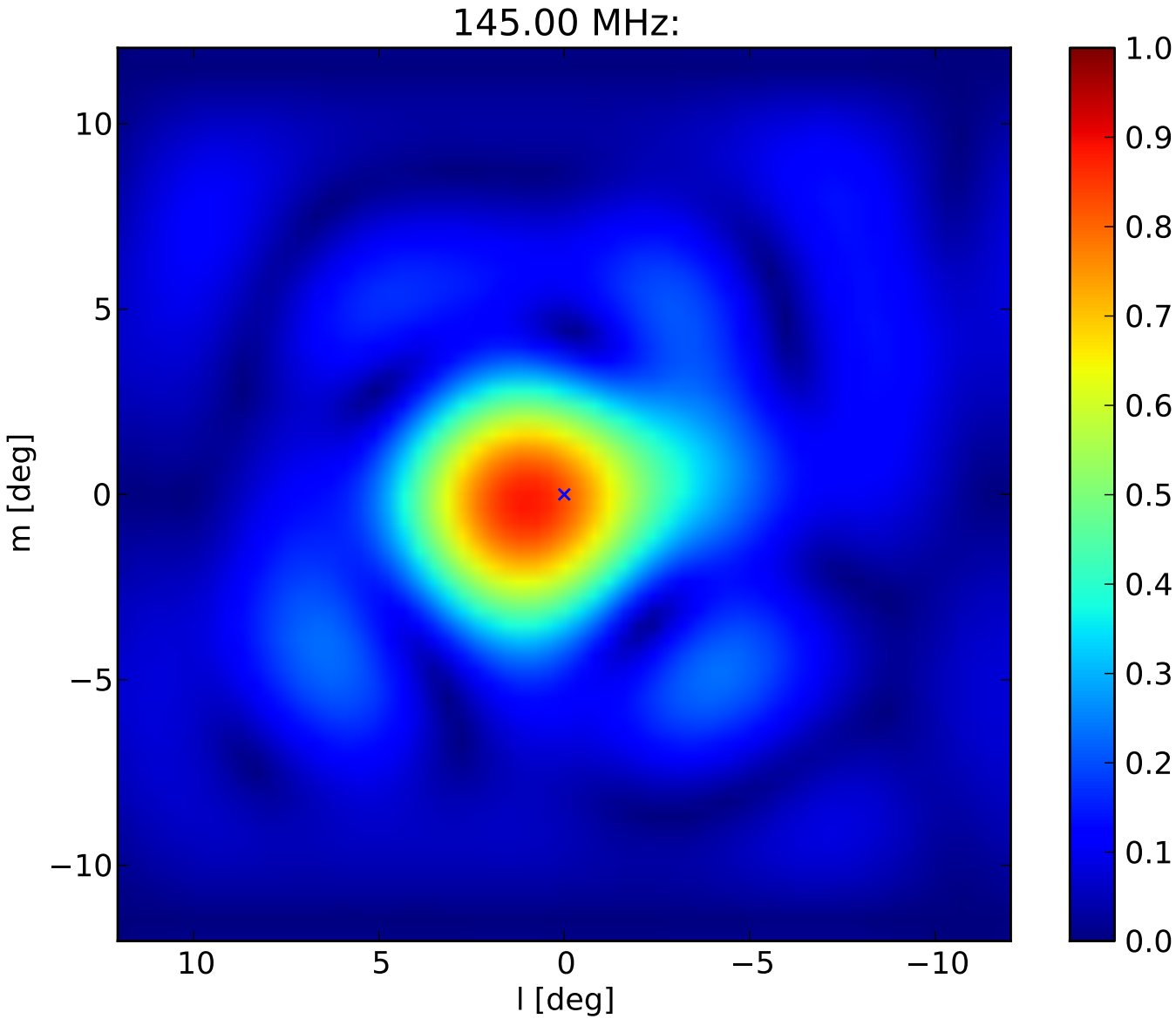

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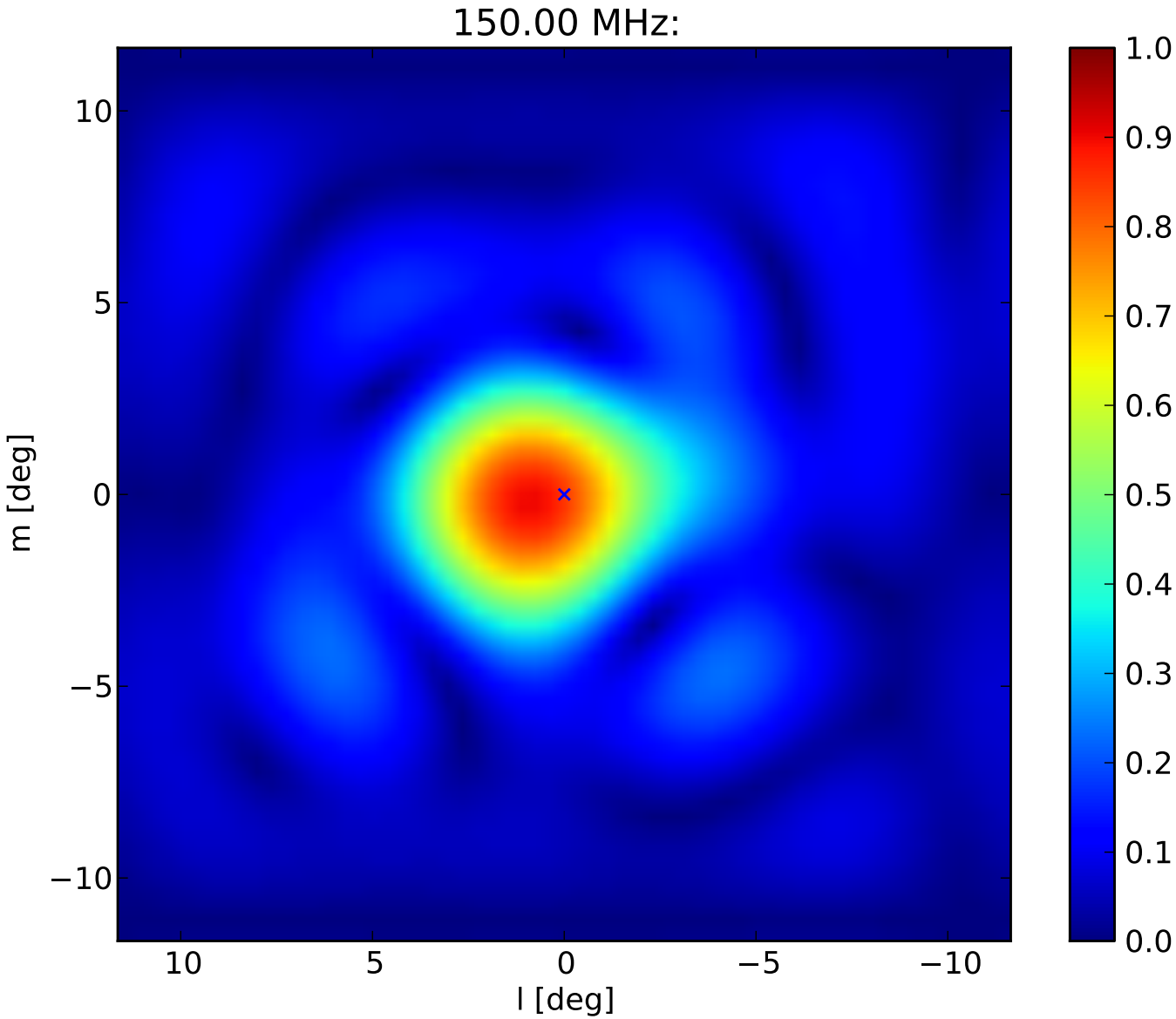

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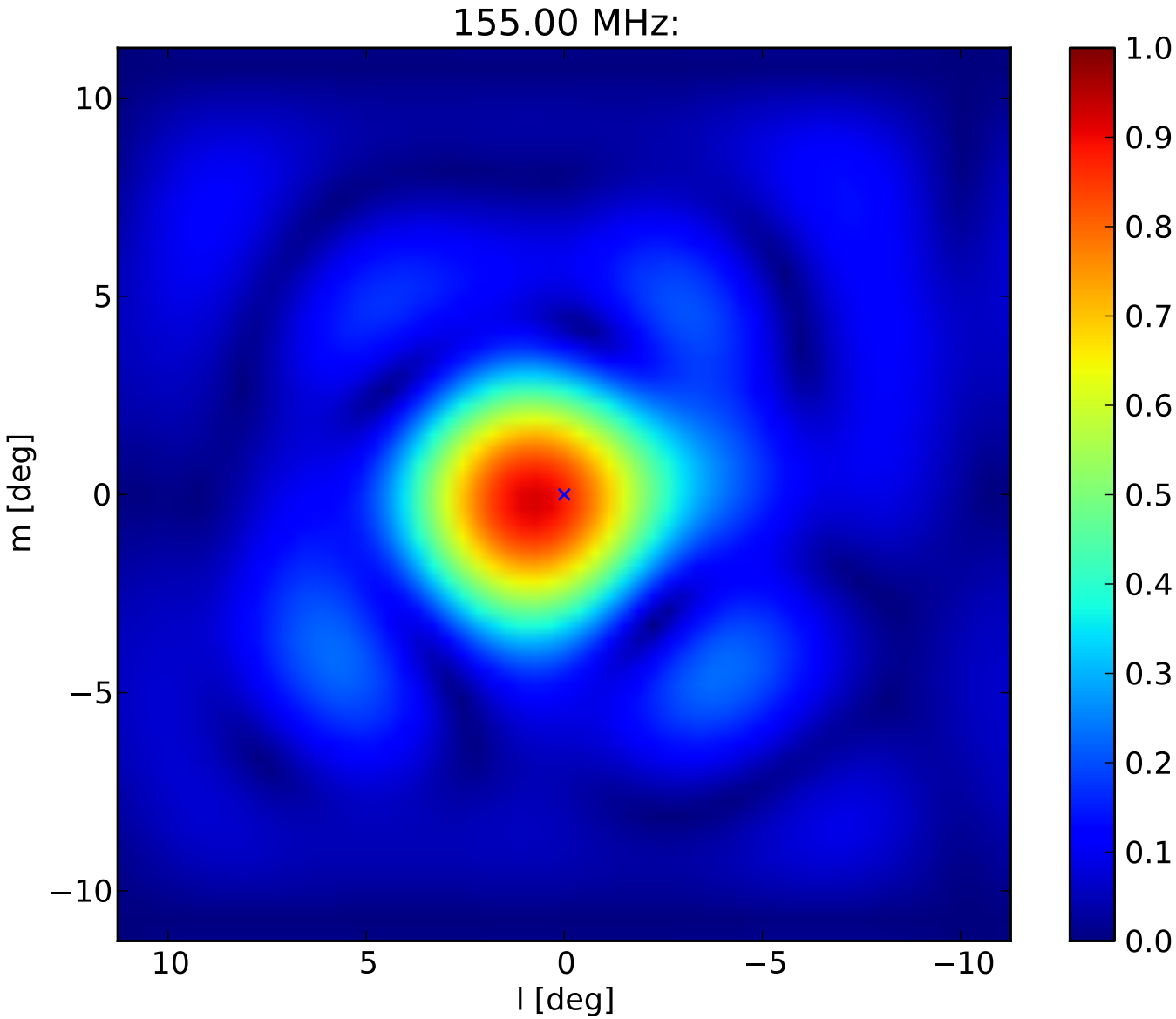

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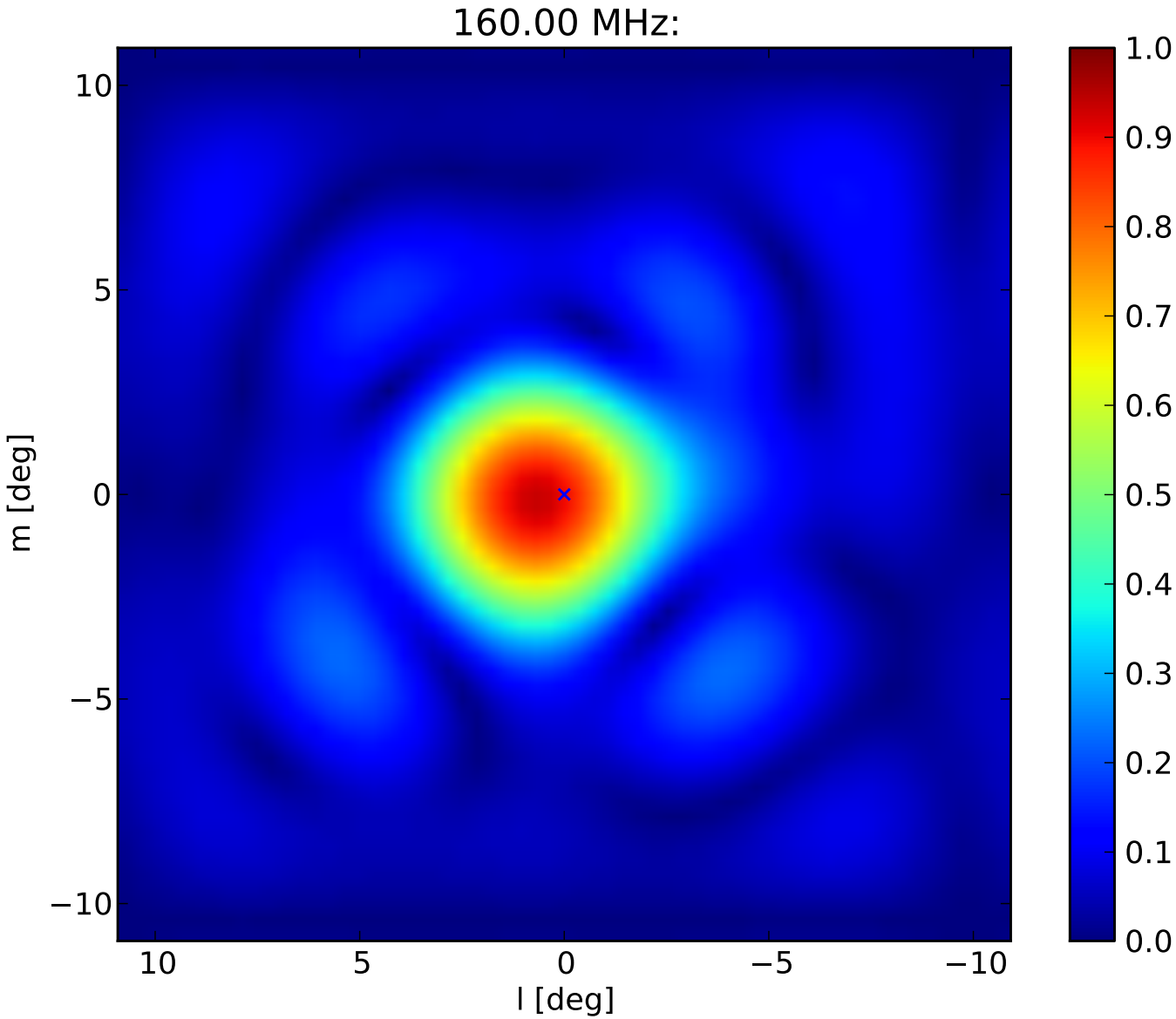

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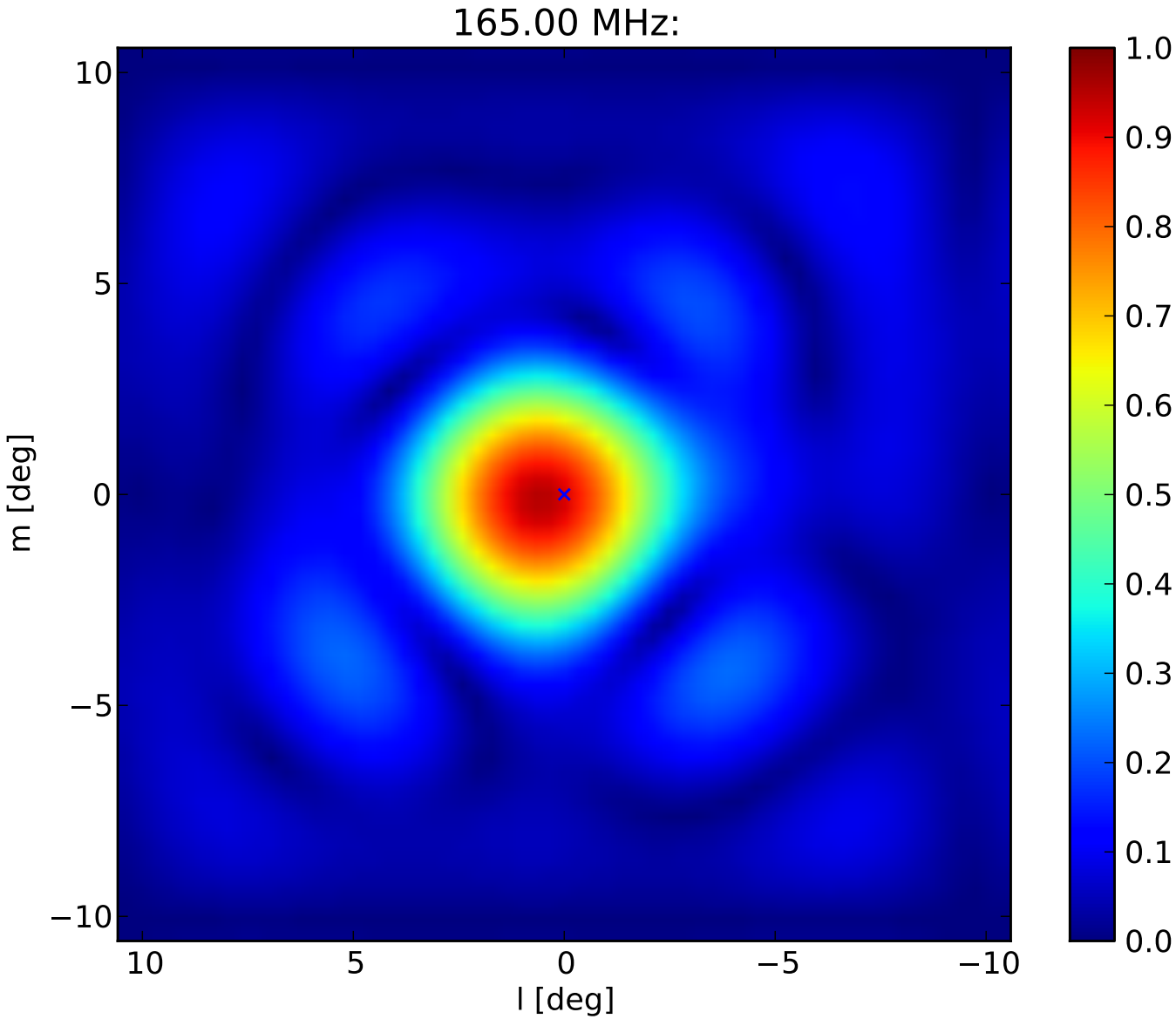

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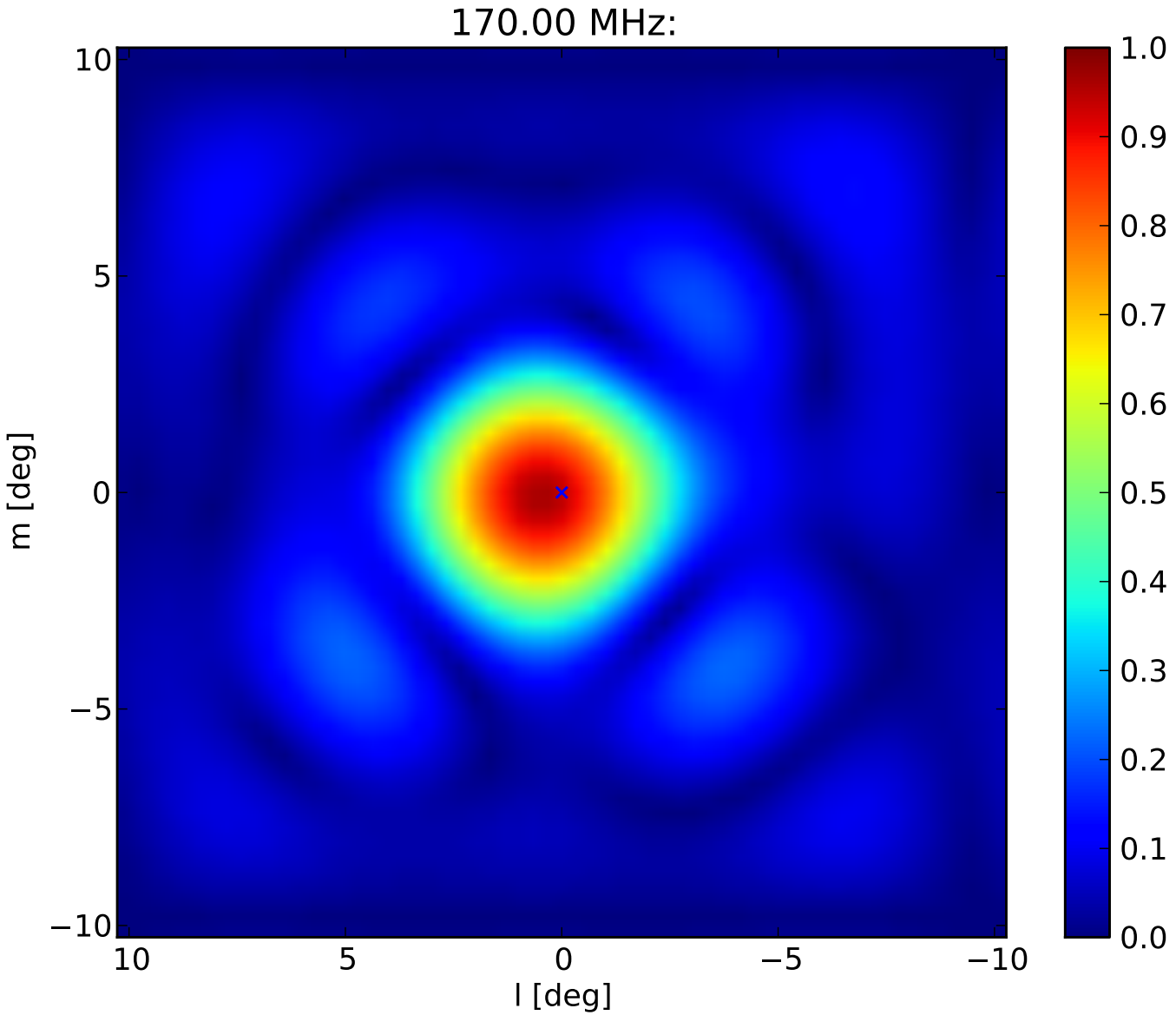

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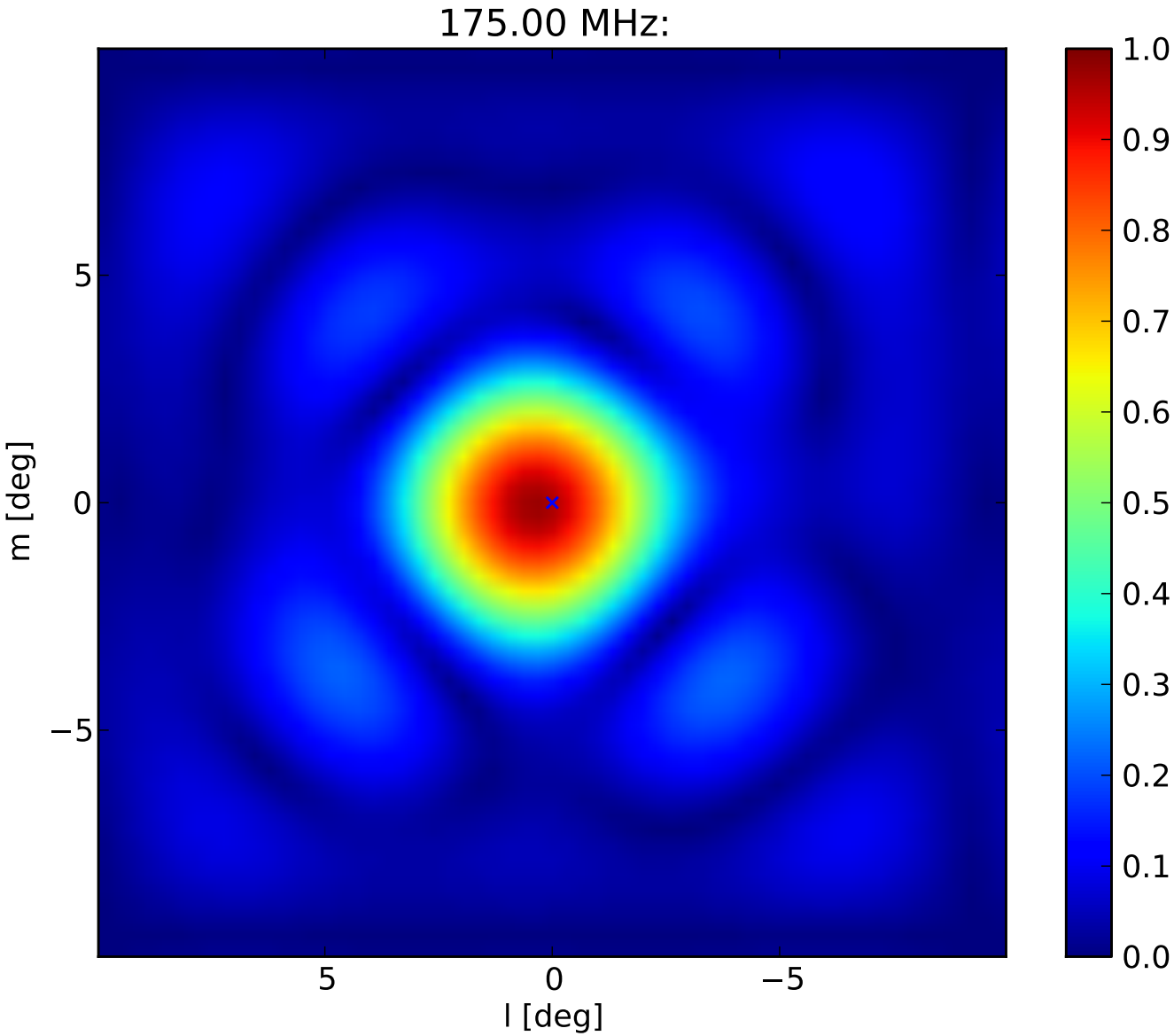

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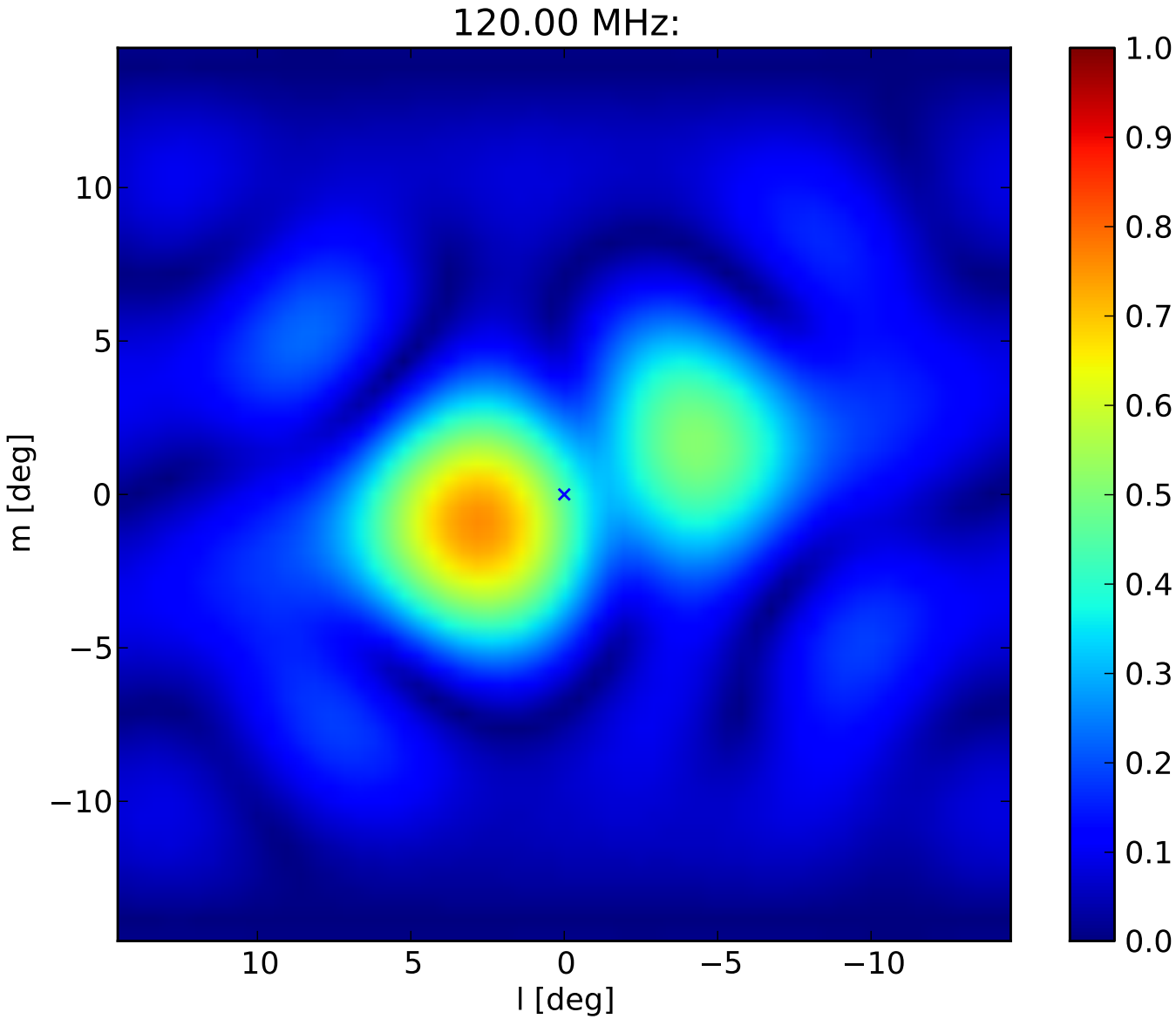

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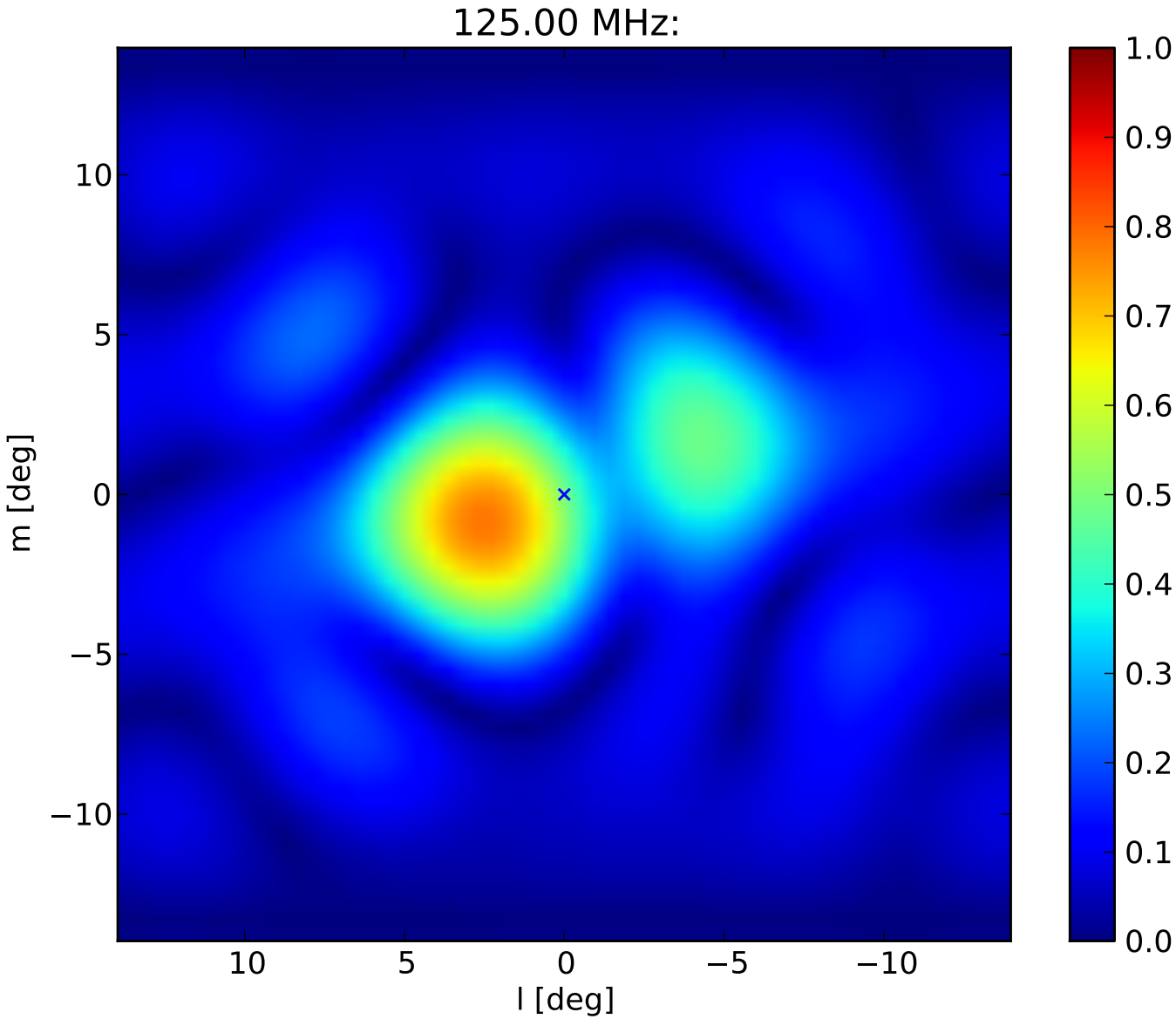

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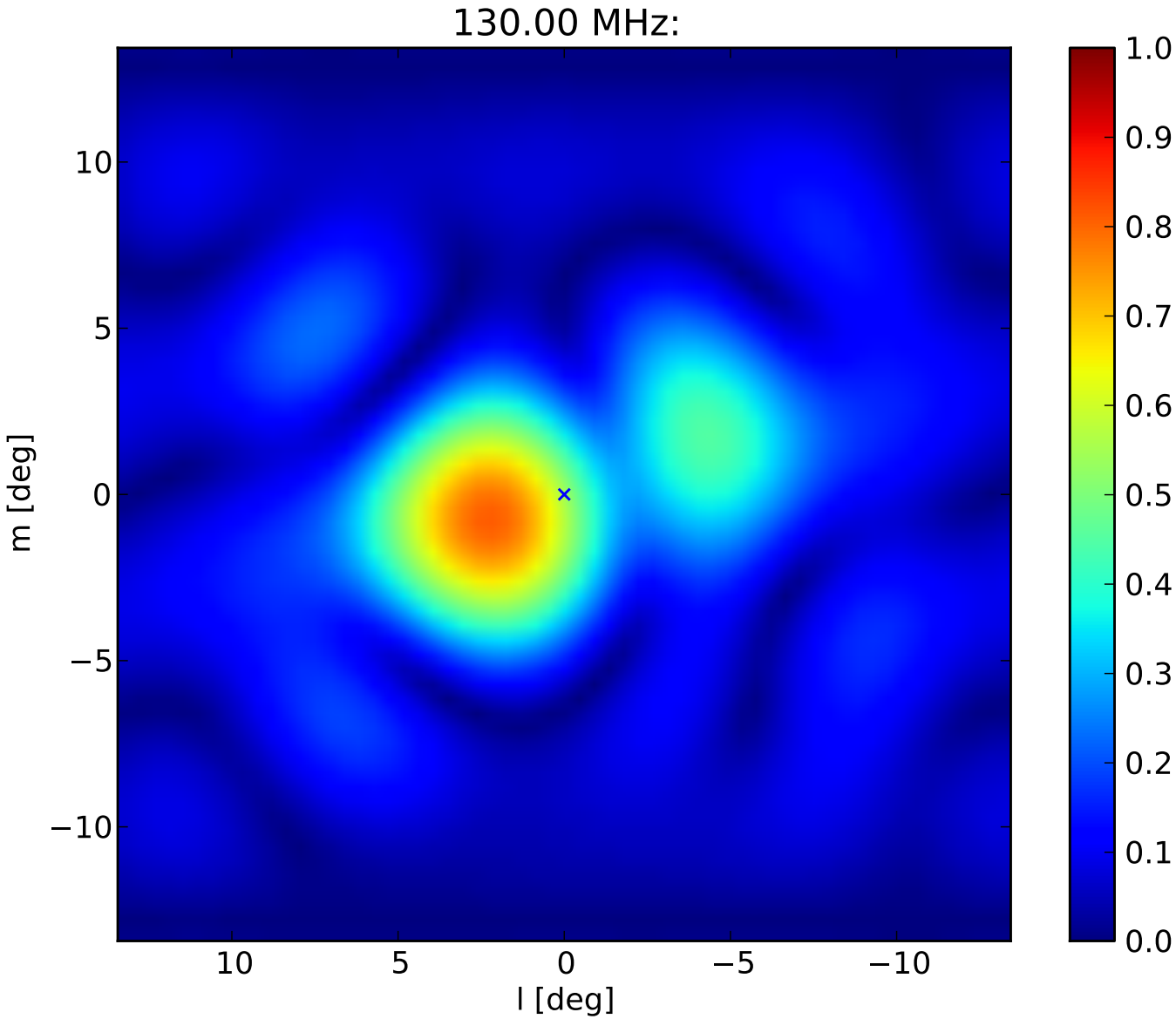

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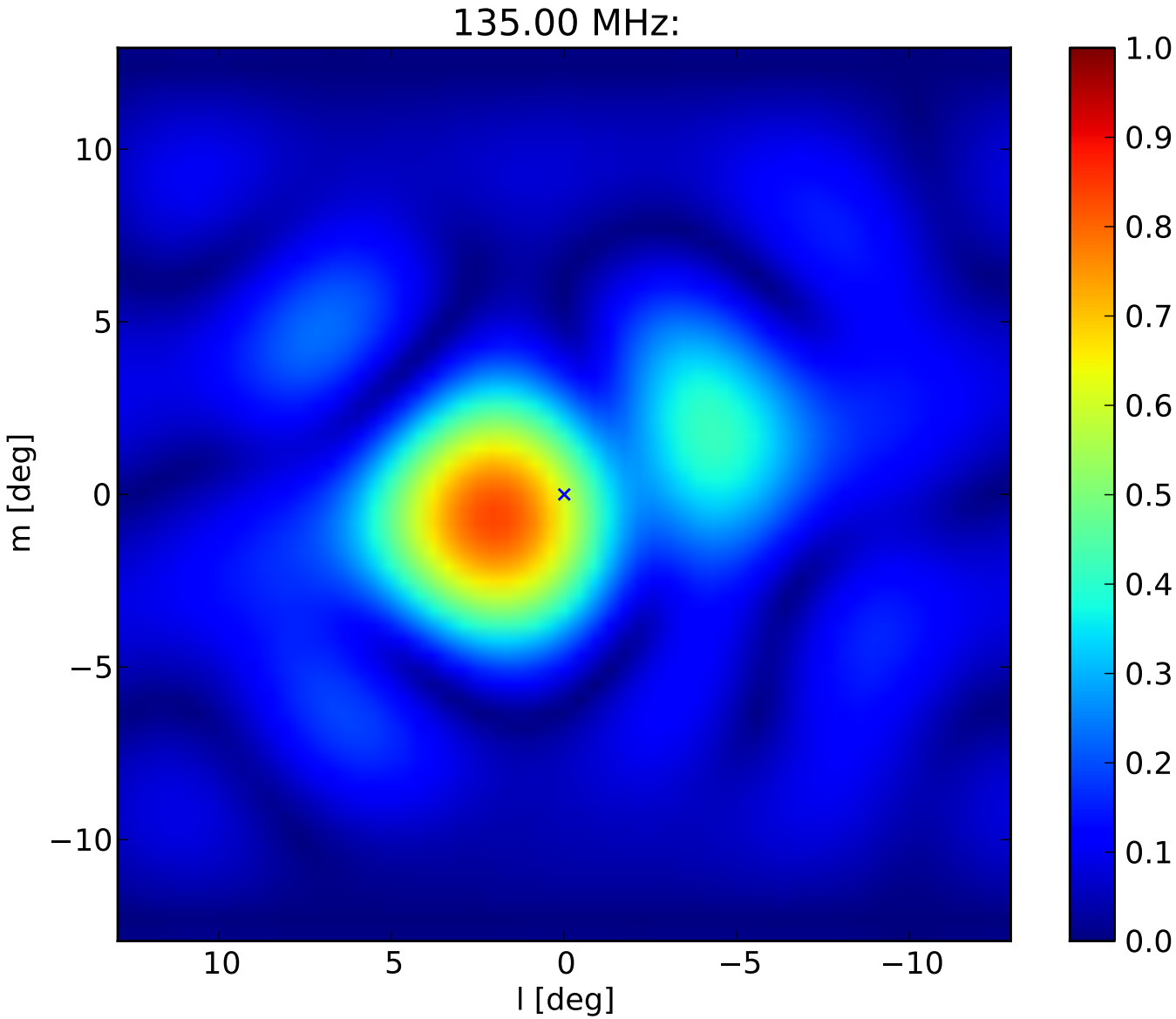

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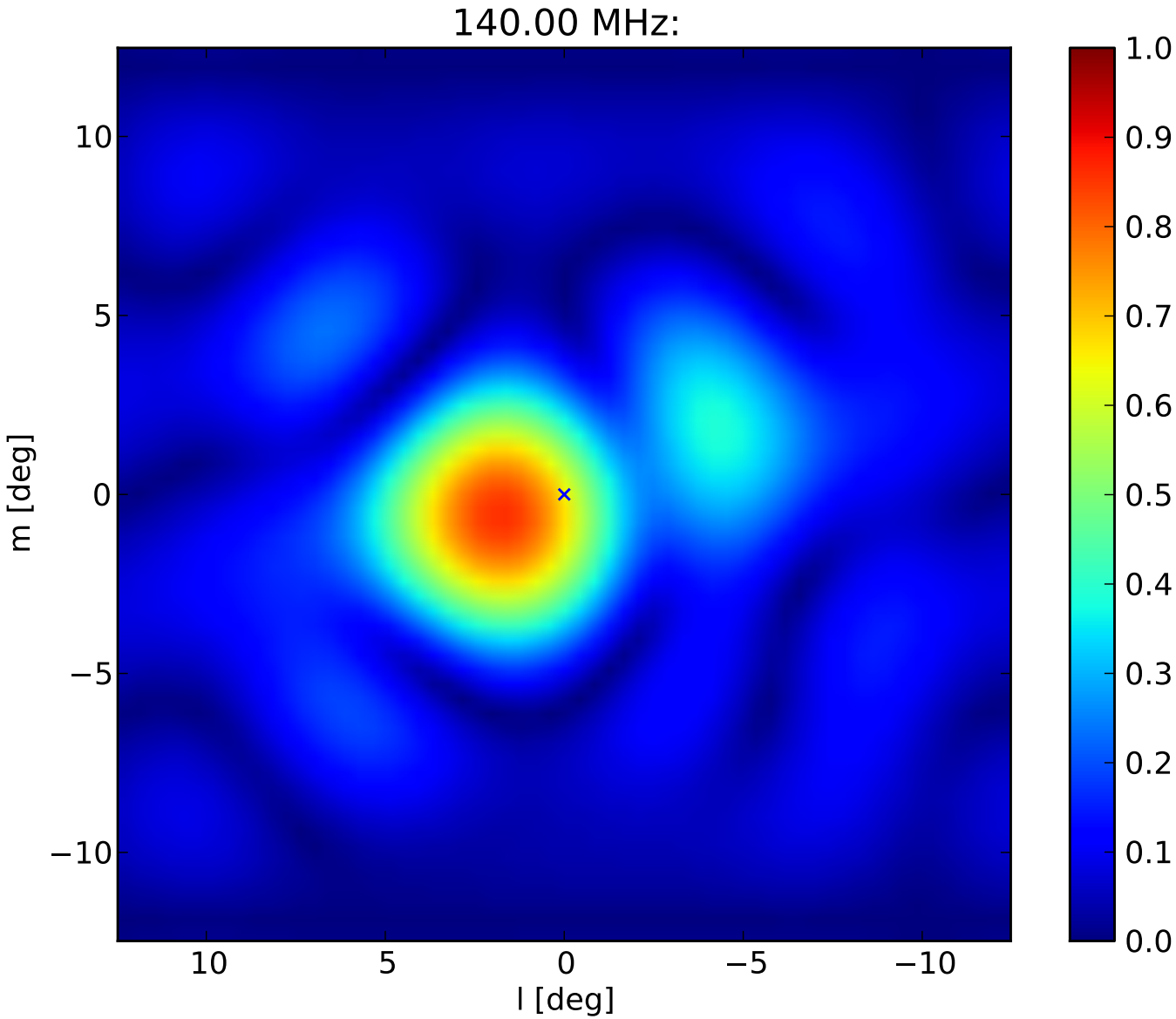

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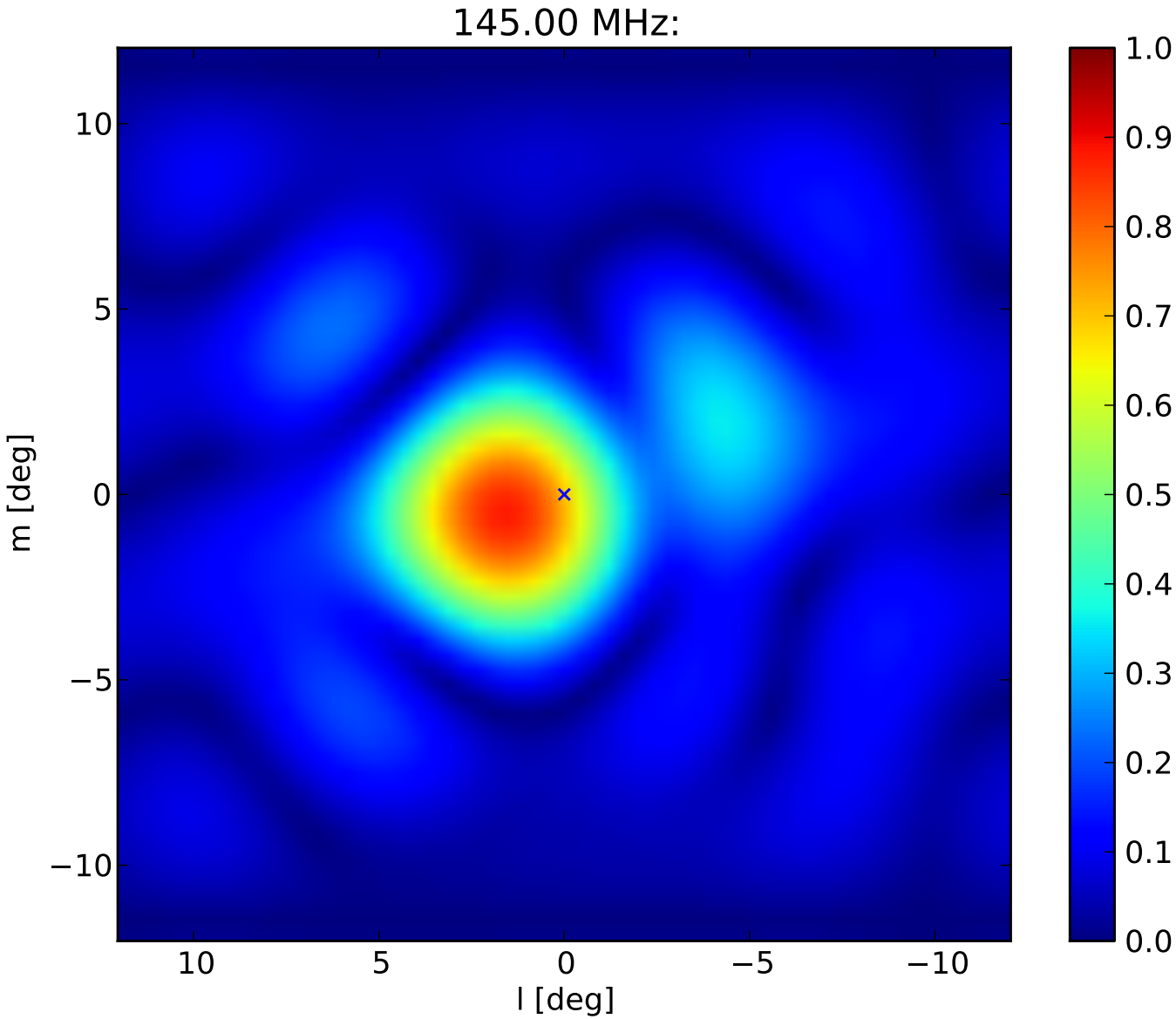

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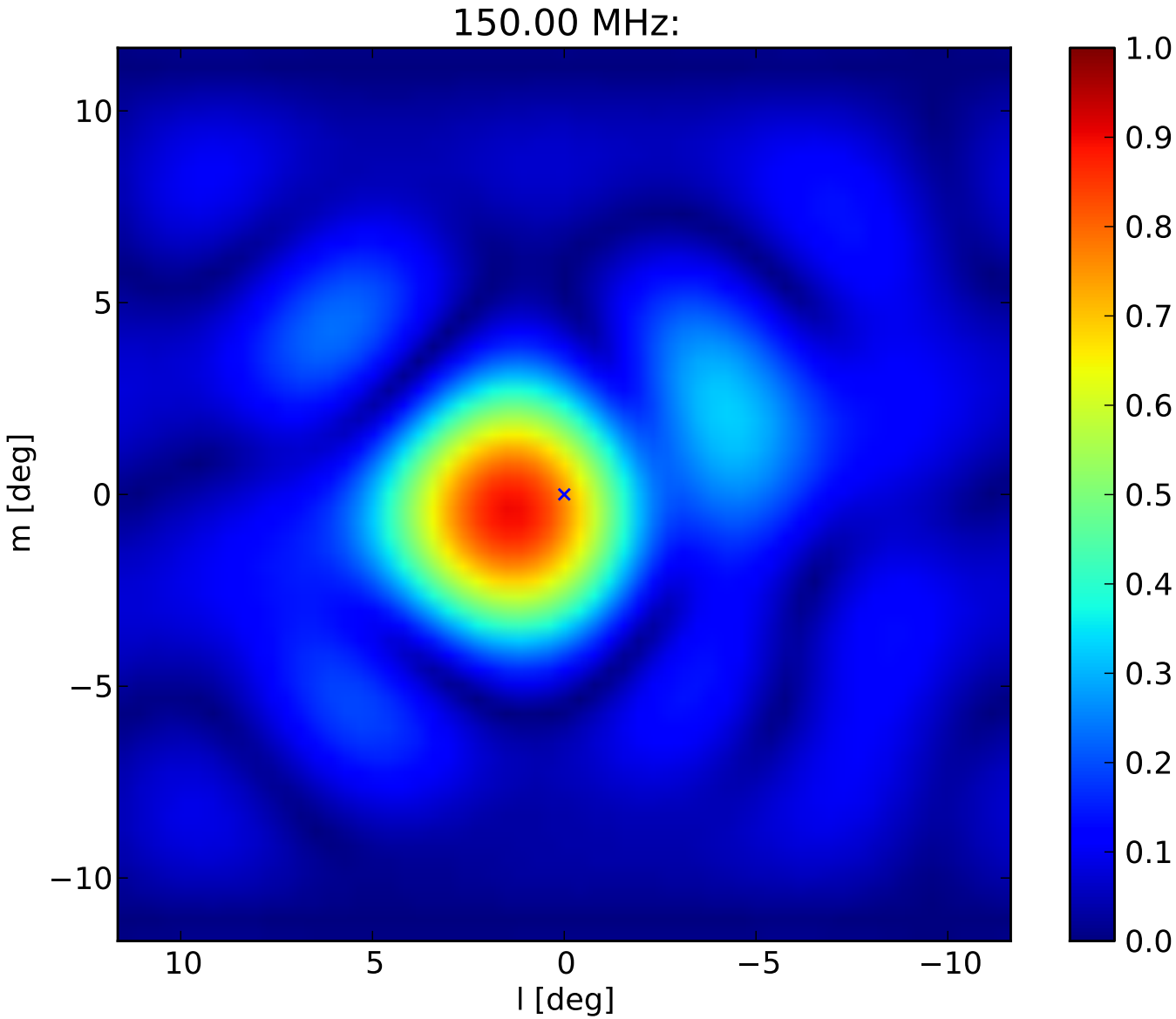

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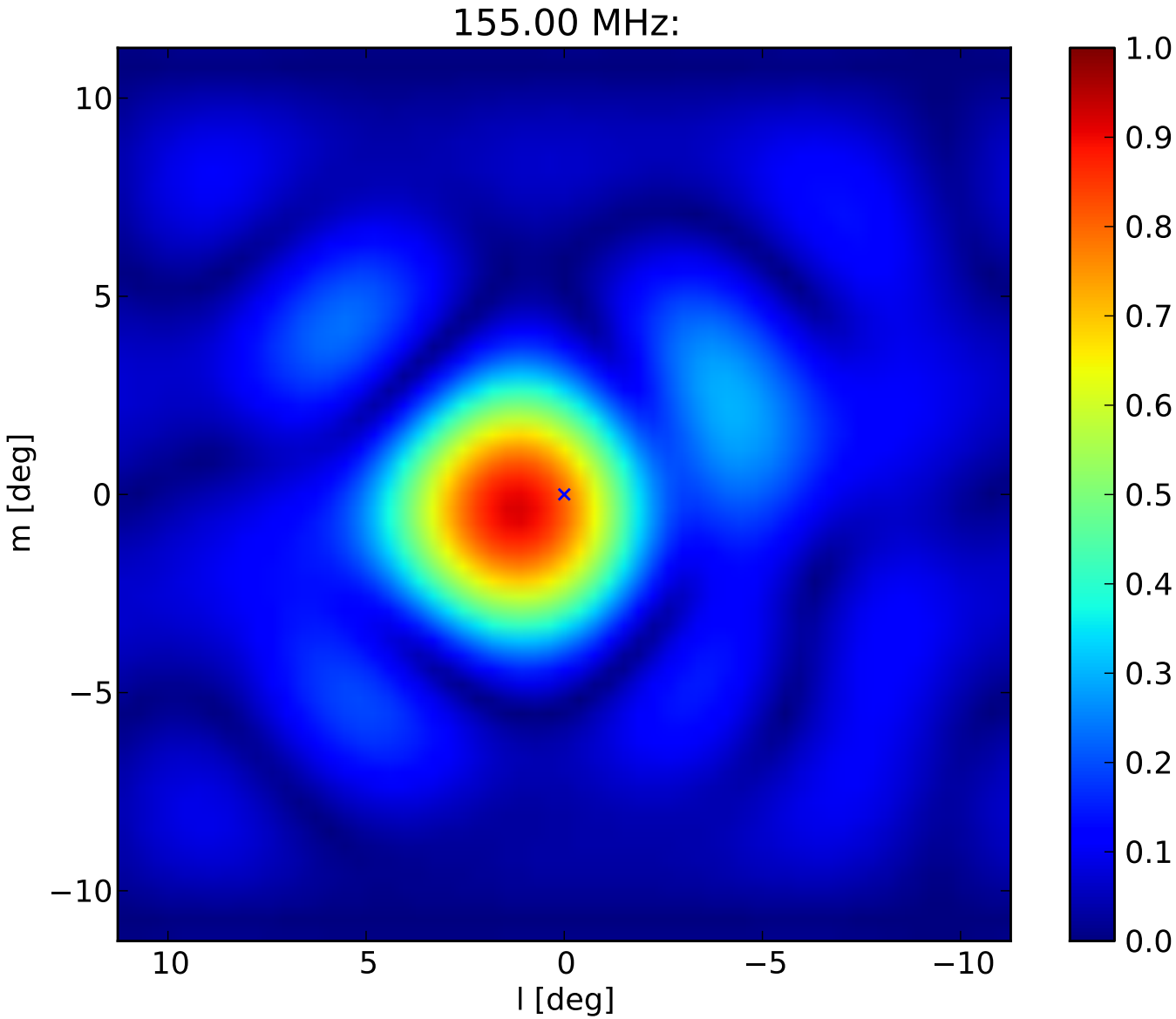

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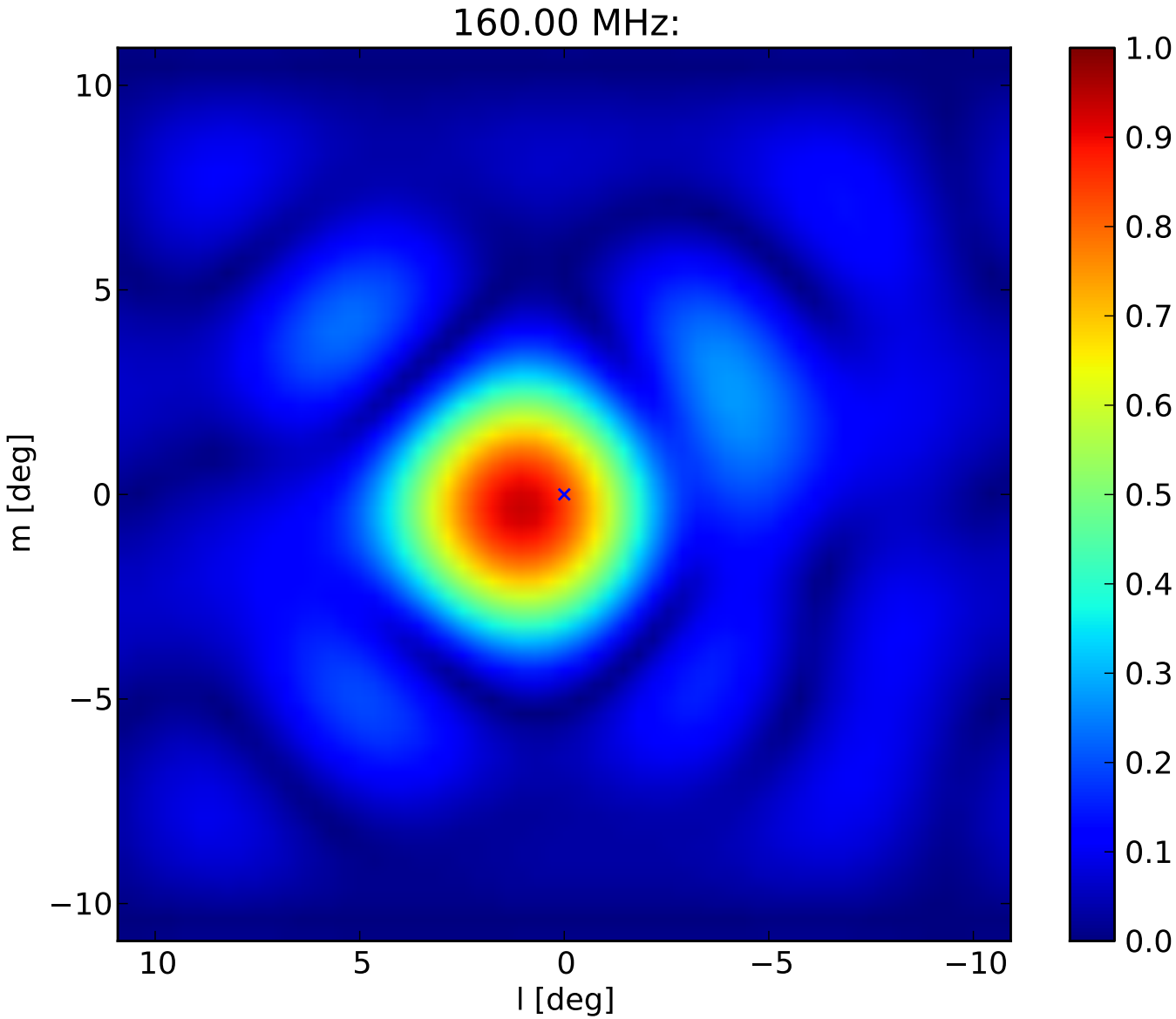

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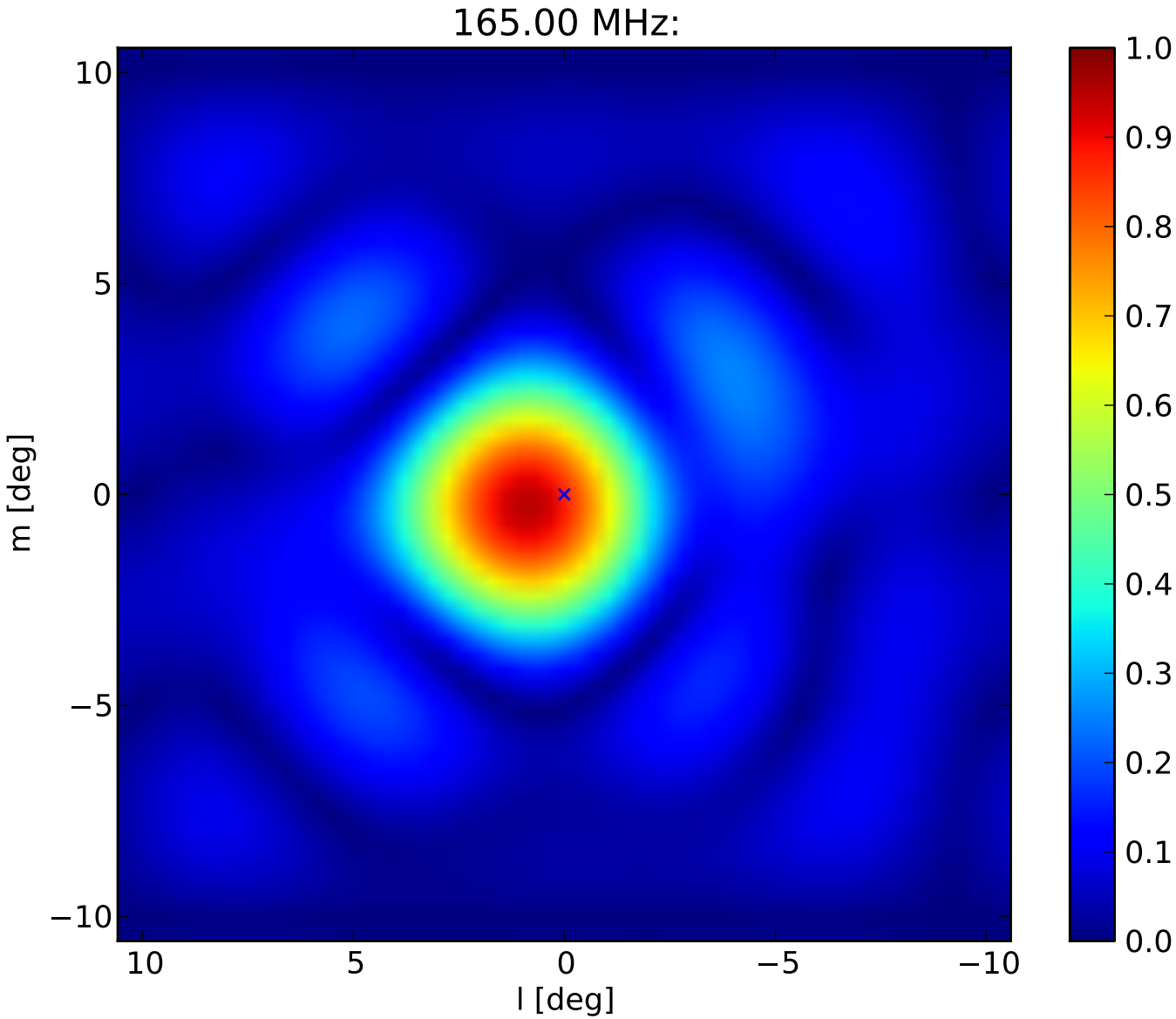

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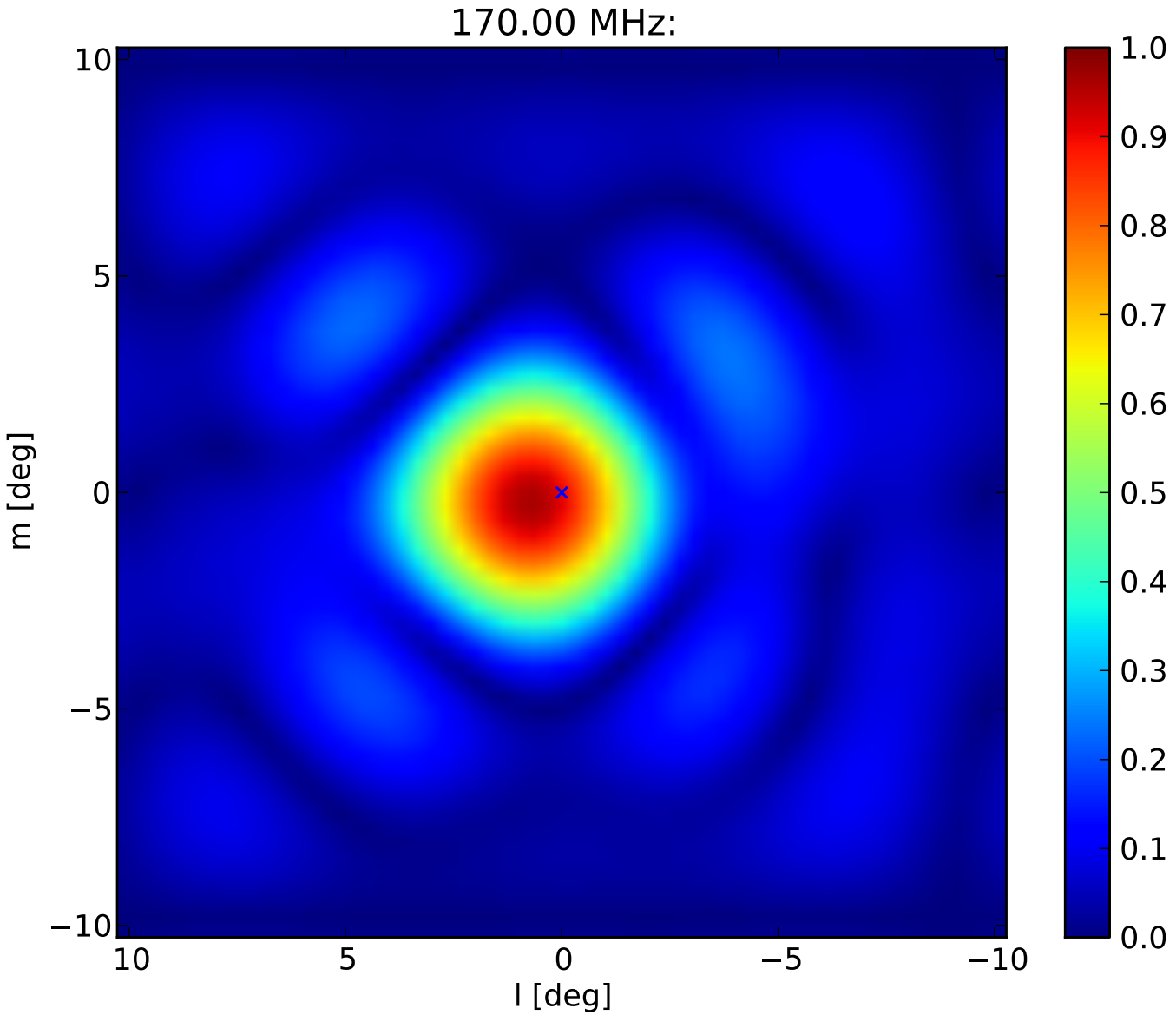

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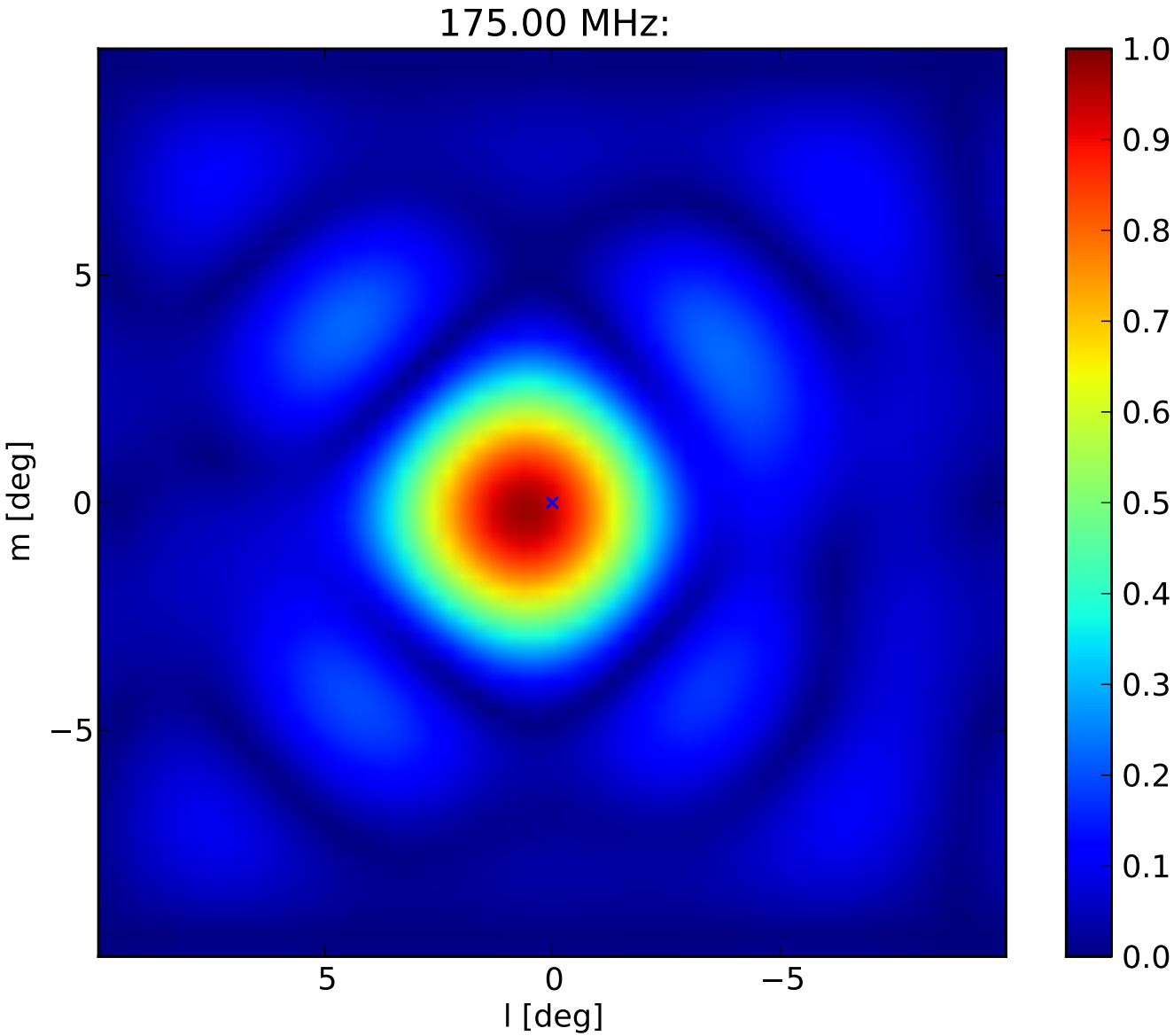

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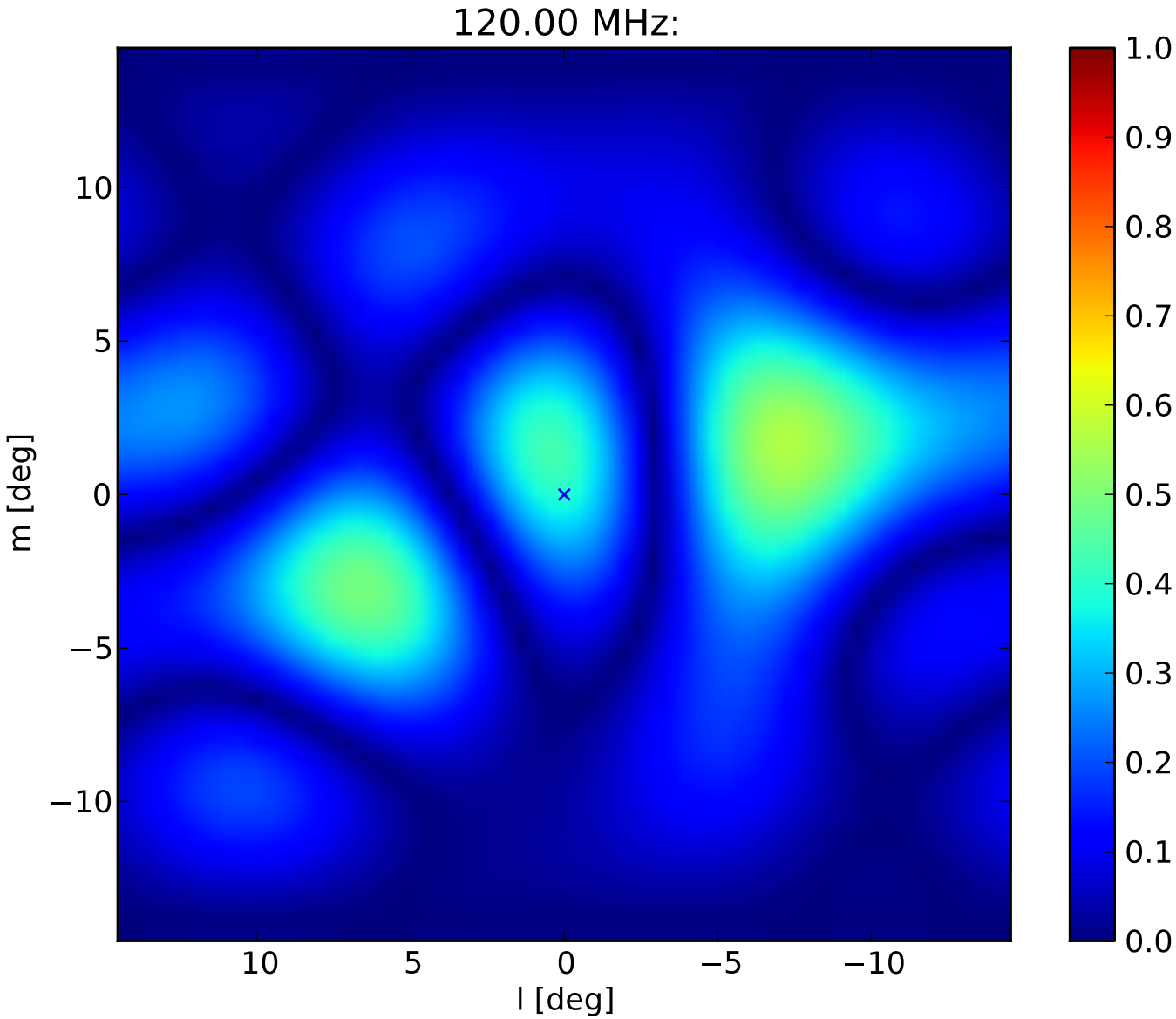

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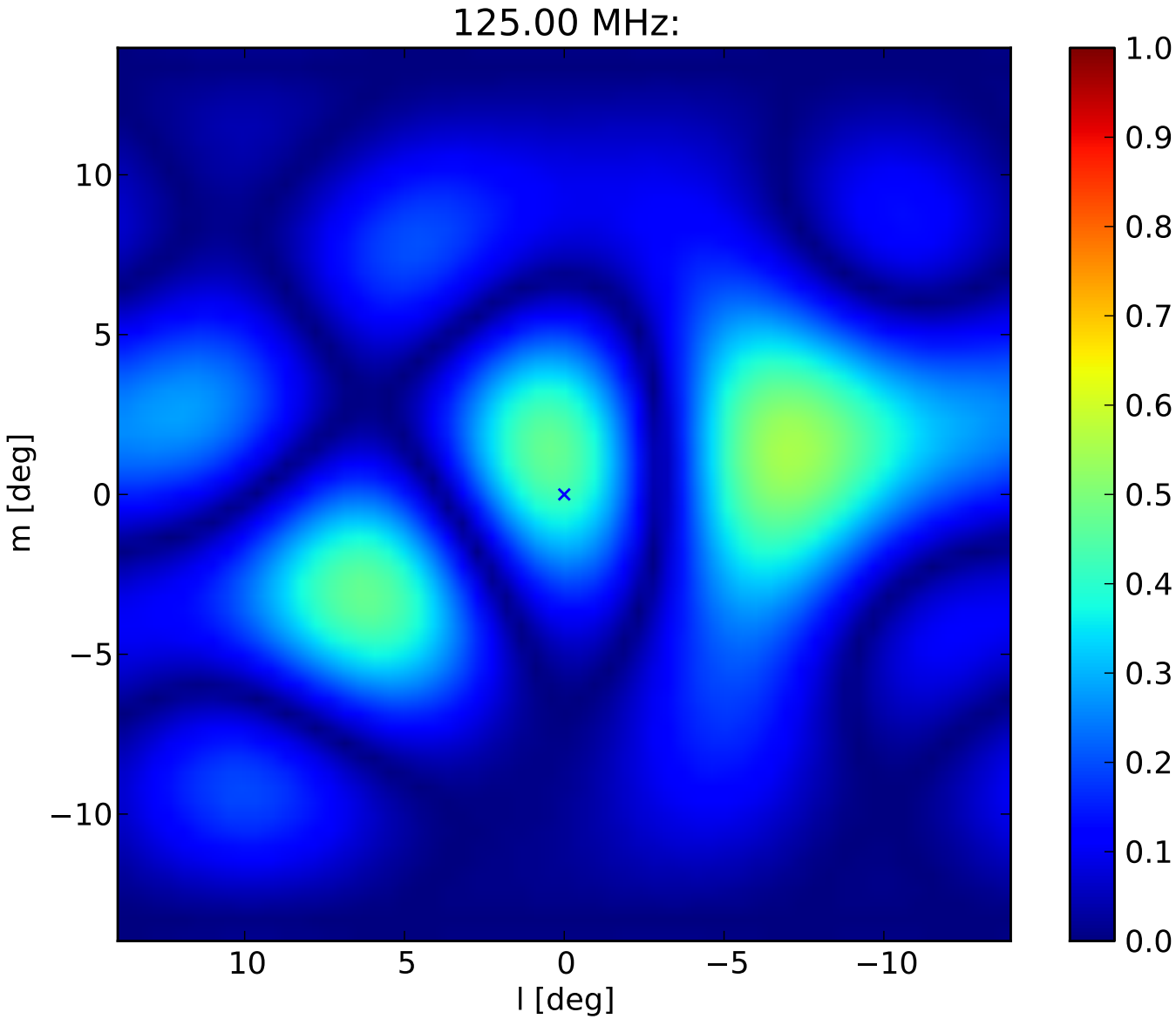

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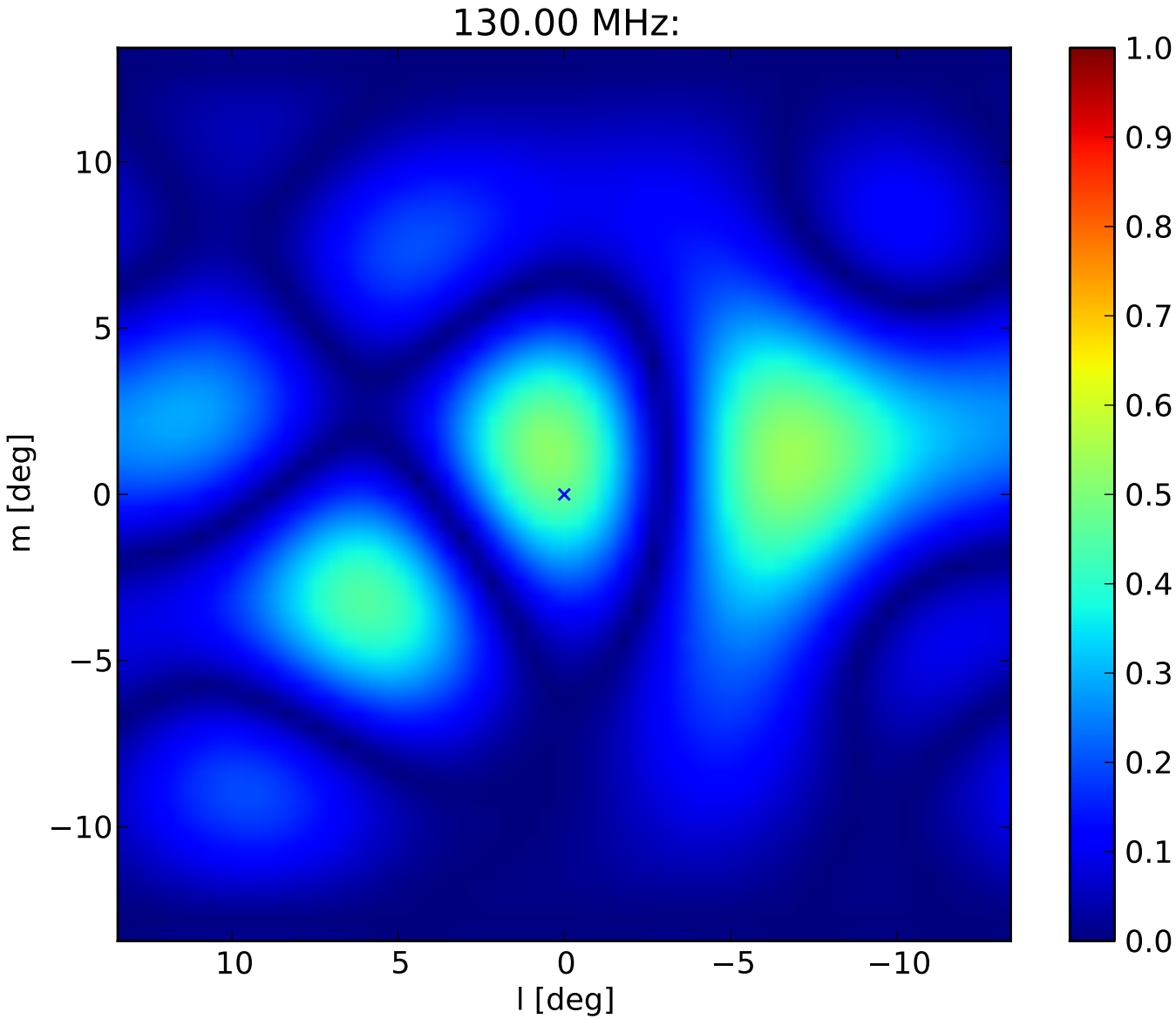

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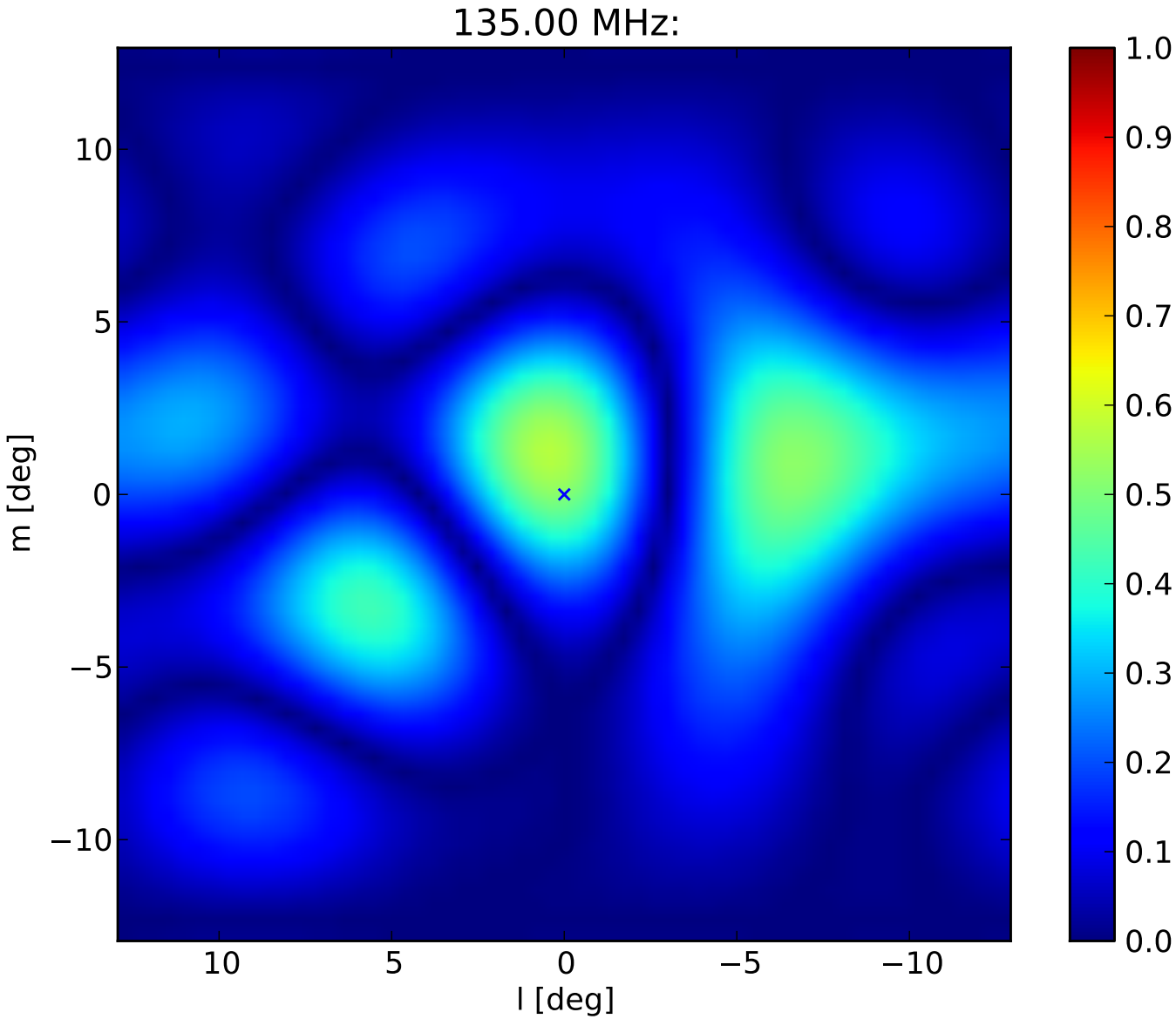

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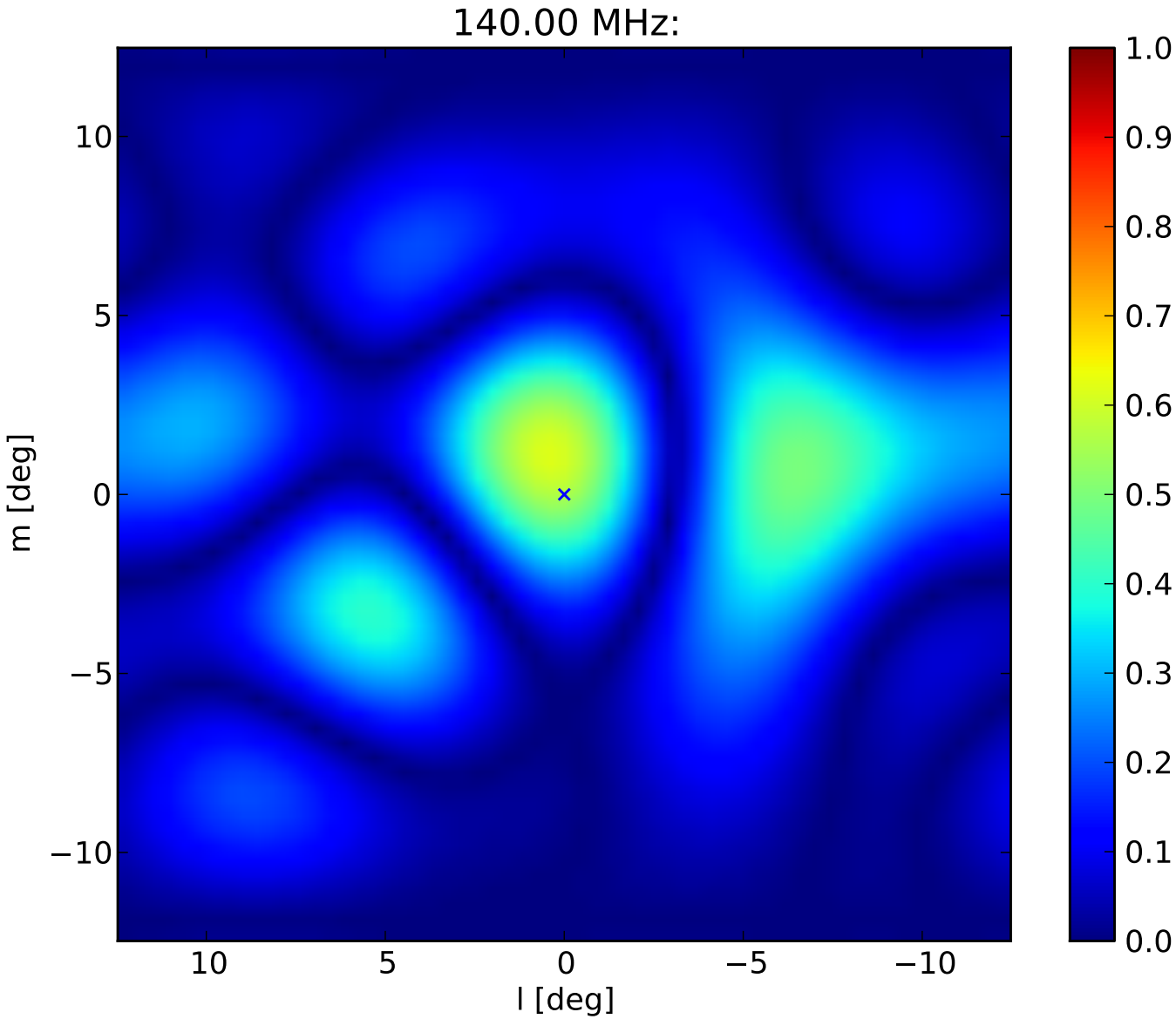

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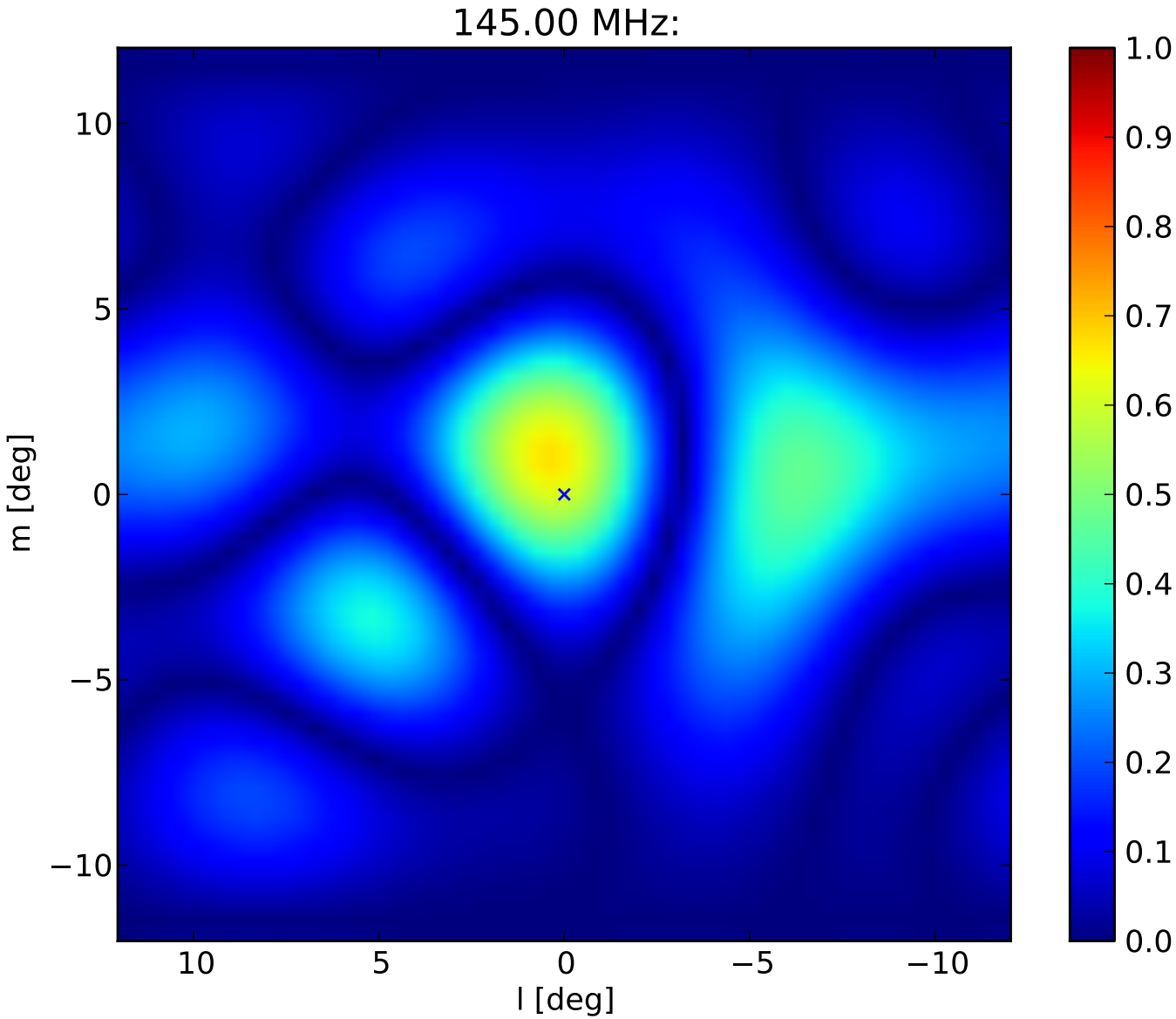

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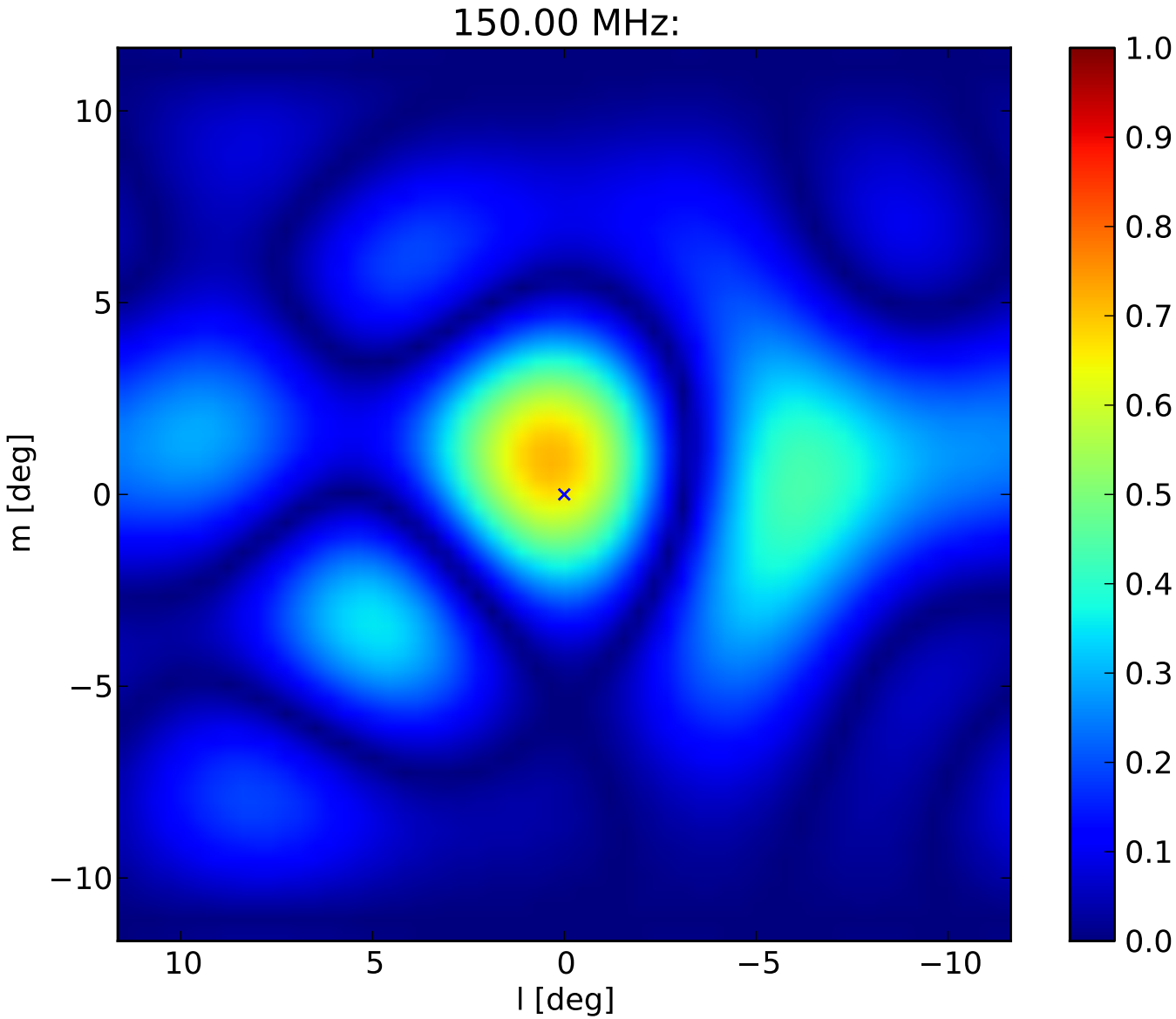

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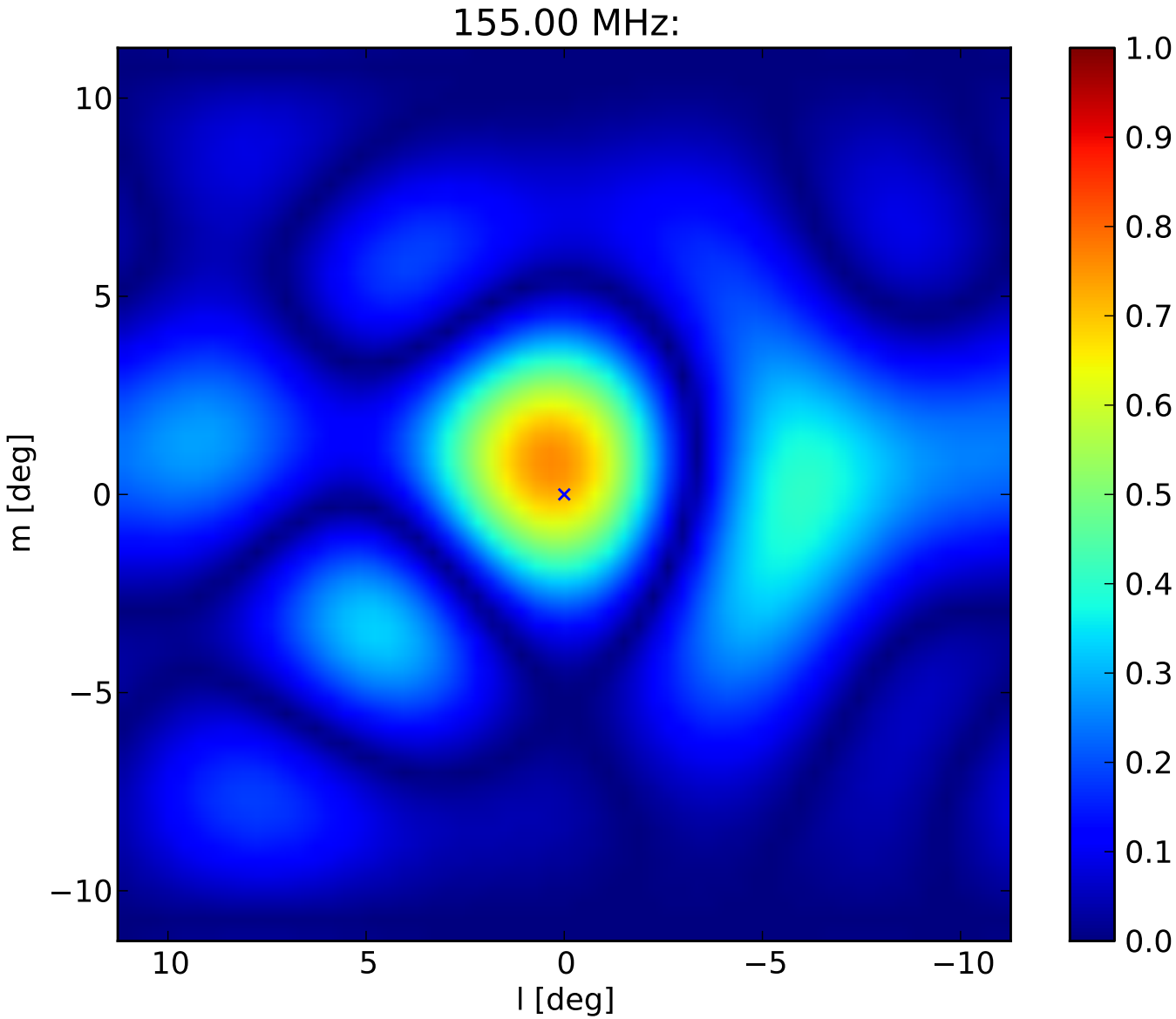

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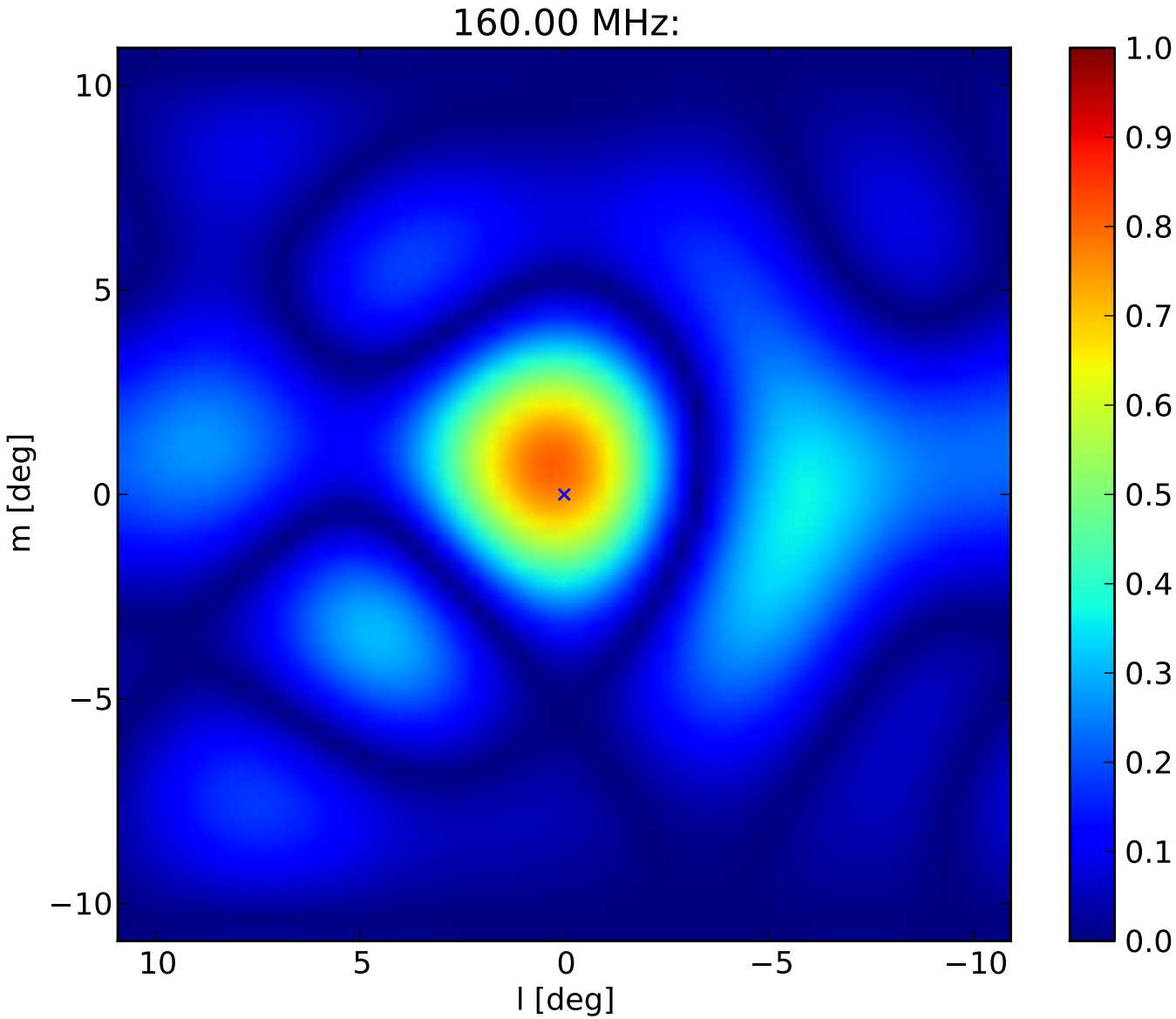

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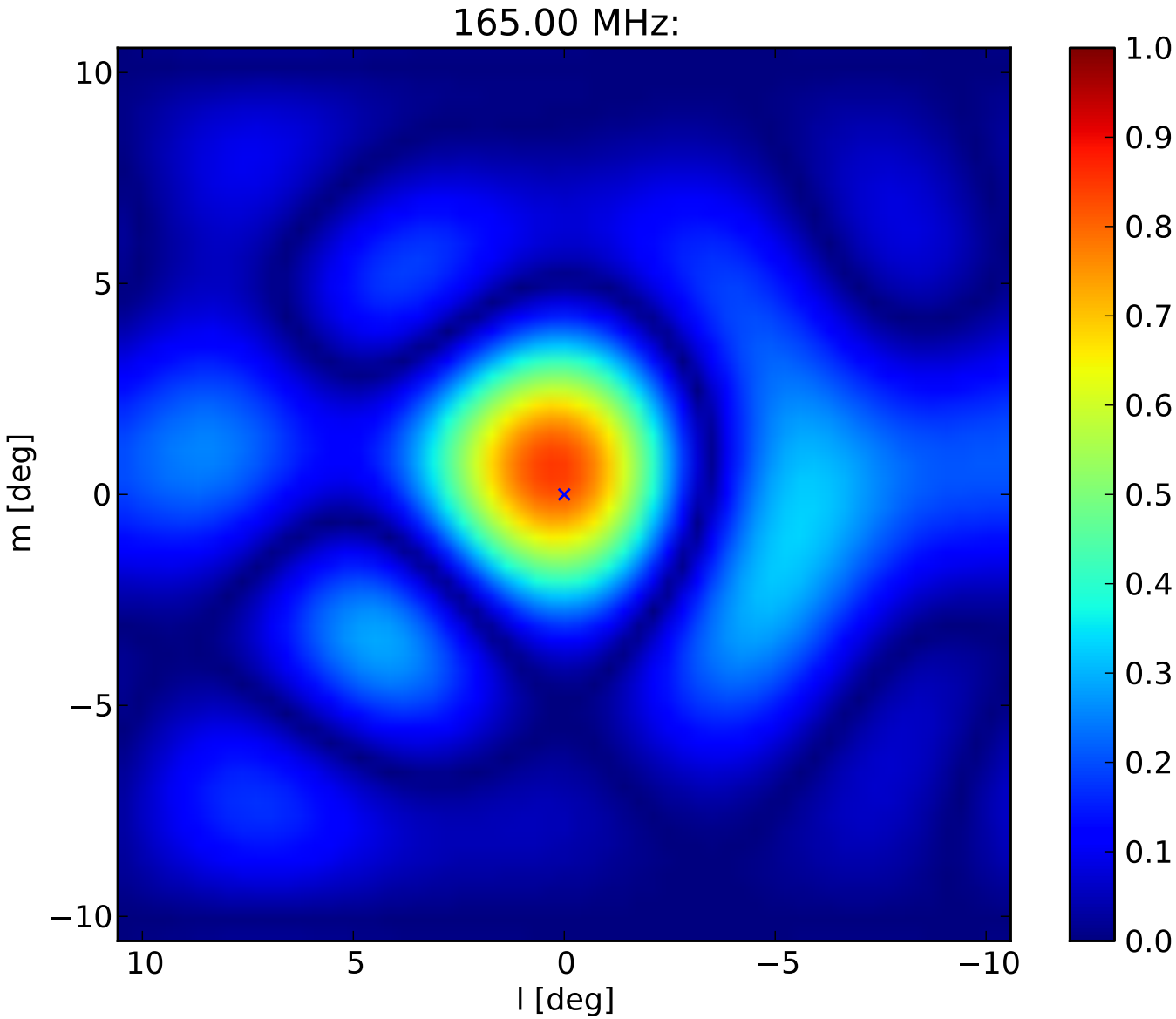

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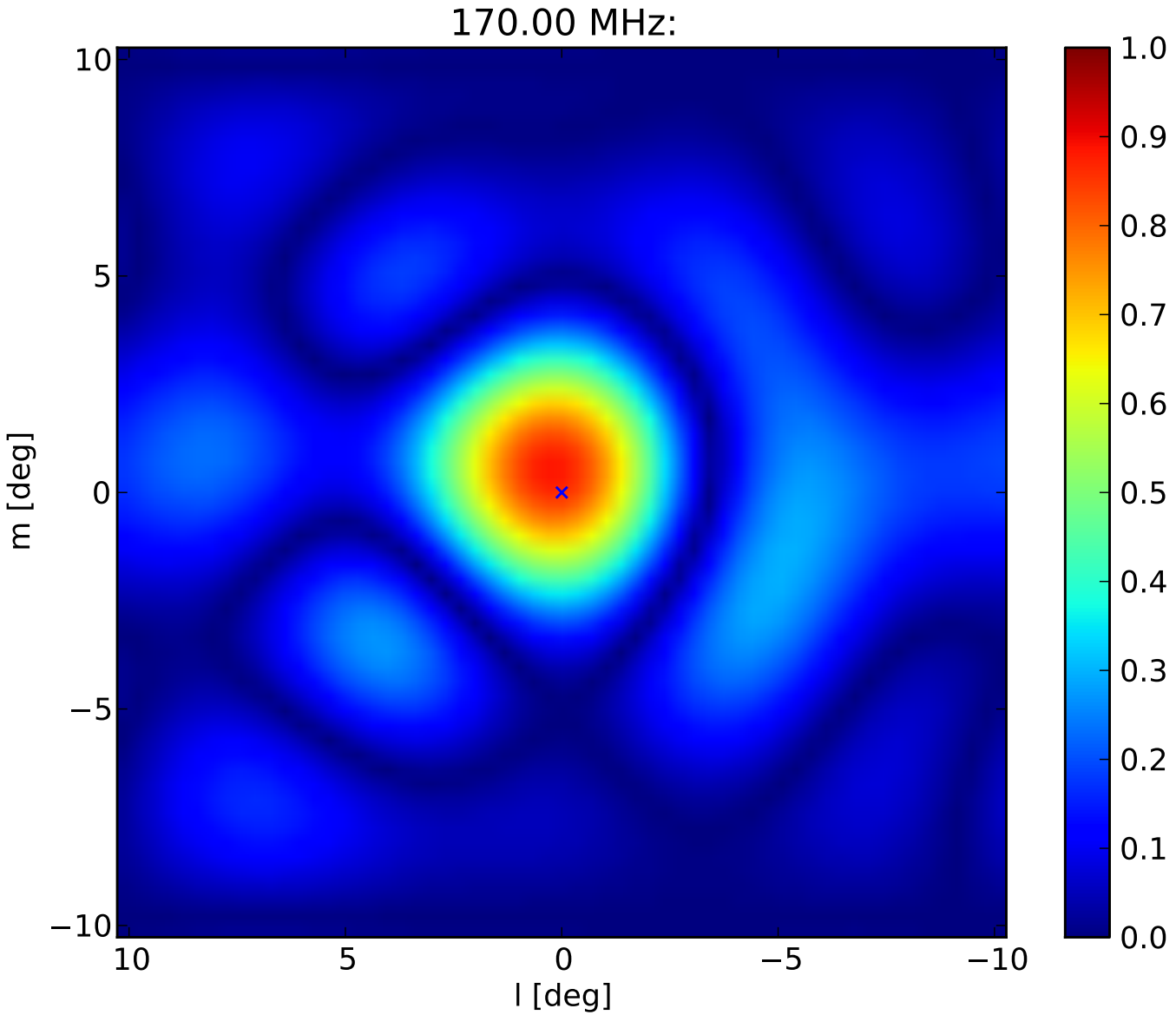

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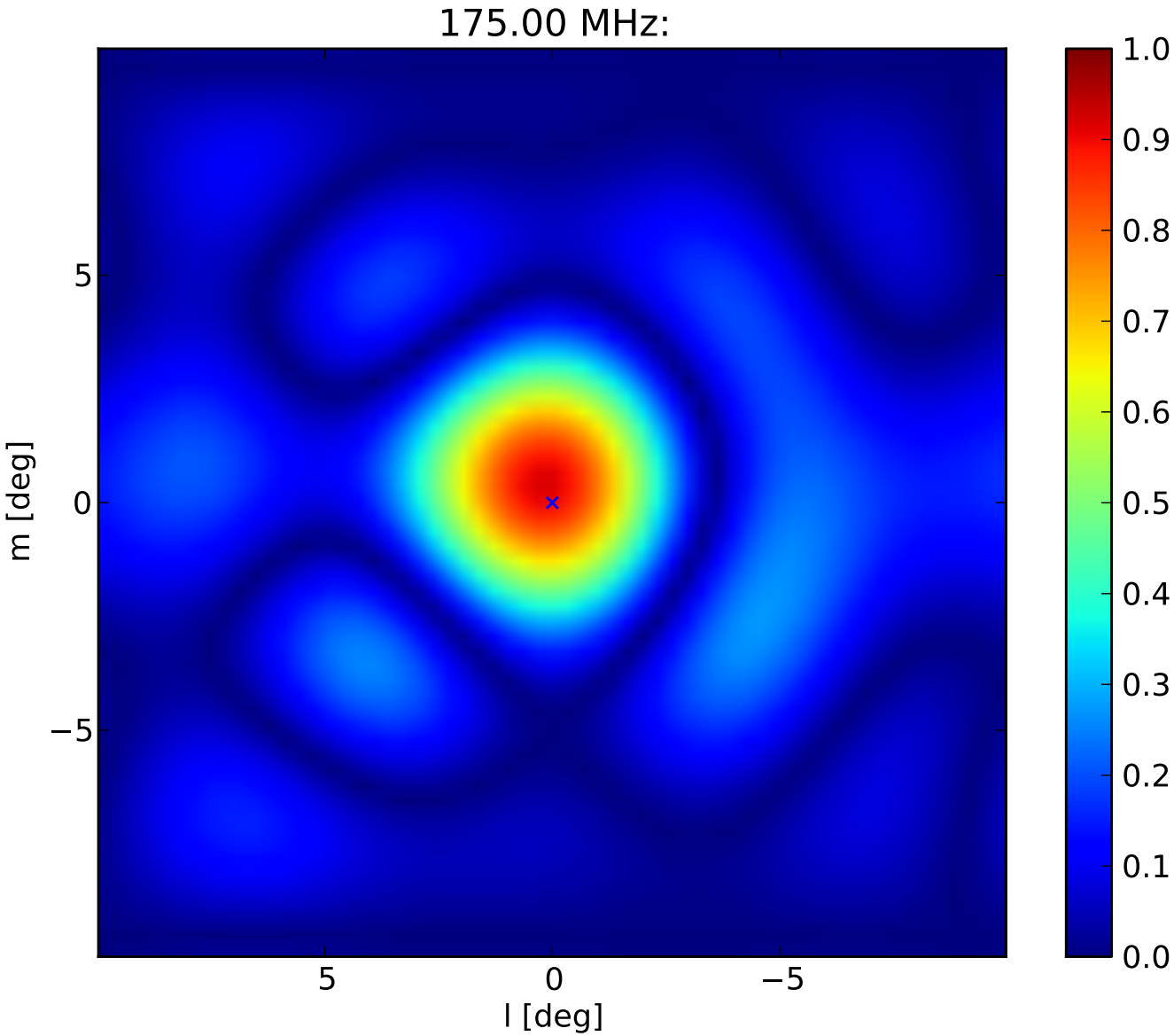

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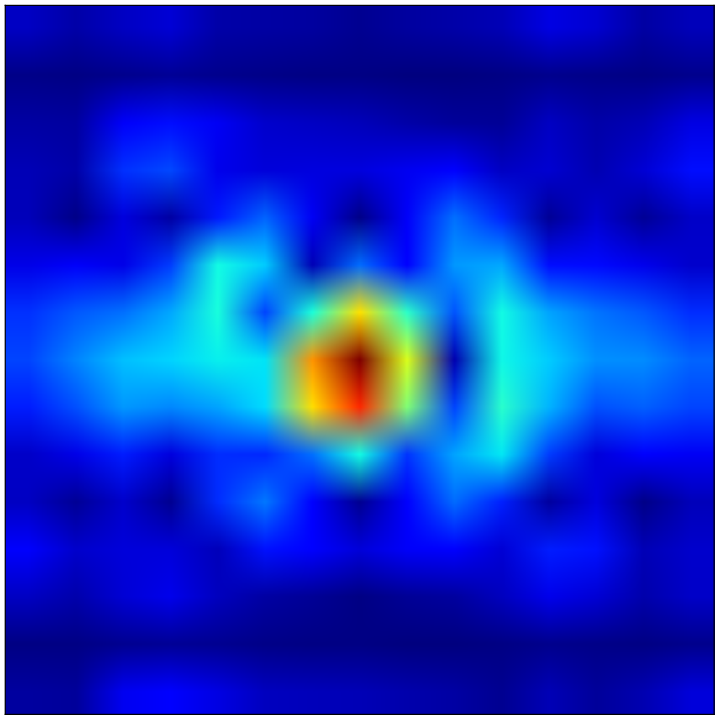
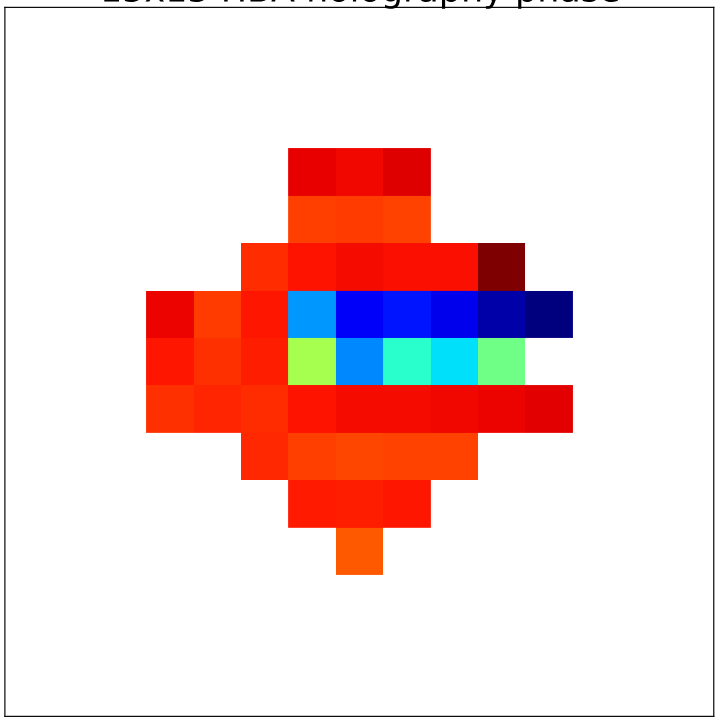
15×15 Holography sim

Beam



15x15 HBA holography phase



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Now what?

- Determine PPS delays per RSP board instead of per subrack.
- Rubidium pulse ill-defined? $\Rightarrow$ exchange rubidiums.
- Attempt to detect issue at swlevel 2 initialization $\Rightarrow$ retry until started up properly.
- Install modified superterp clock distribution boards elsewhere.
- Redetermine all mode 5, 6, and 7 calibration tables.
- Include PPS delay info in calibration table headers.
- Implement holography mode