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Coláiste na Tríonóide, Baile Átha Cliath
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LOFAR observations of a jet-driven piston shock in the low solar corona

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IRISH RESEARCH COUNCIL
An Chomhairle um Thaighde in Éirinn

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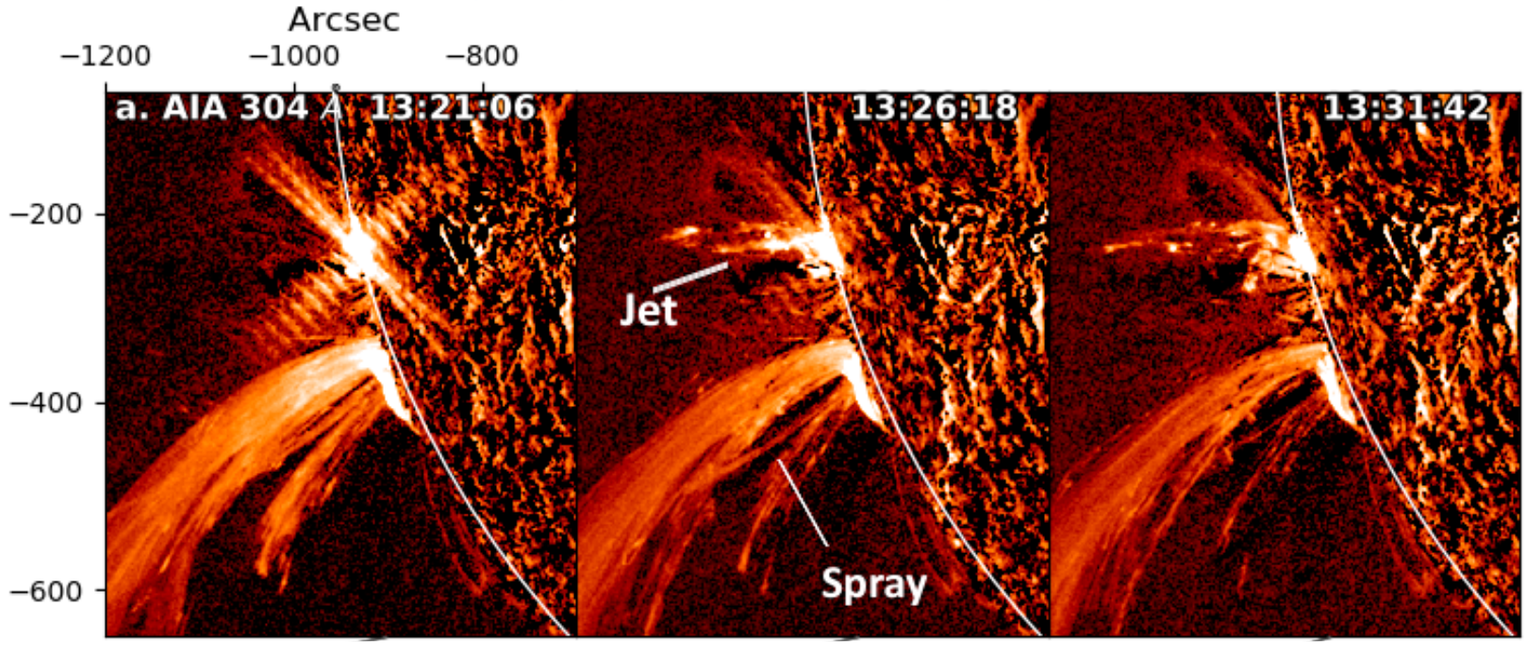
16 October 2015

EUV



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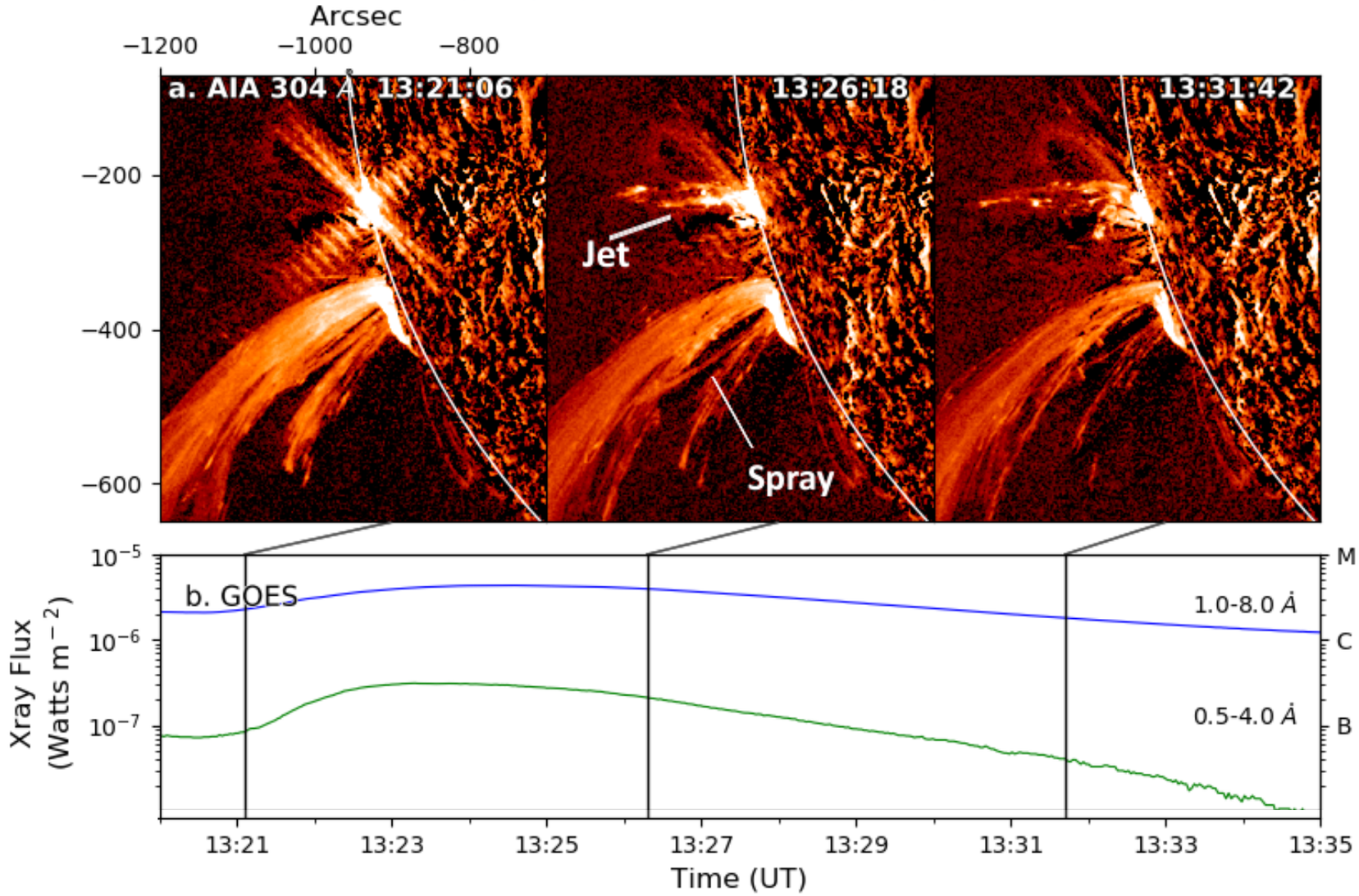
16 October 2015

EUV

X-ray



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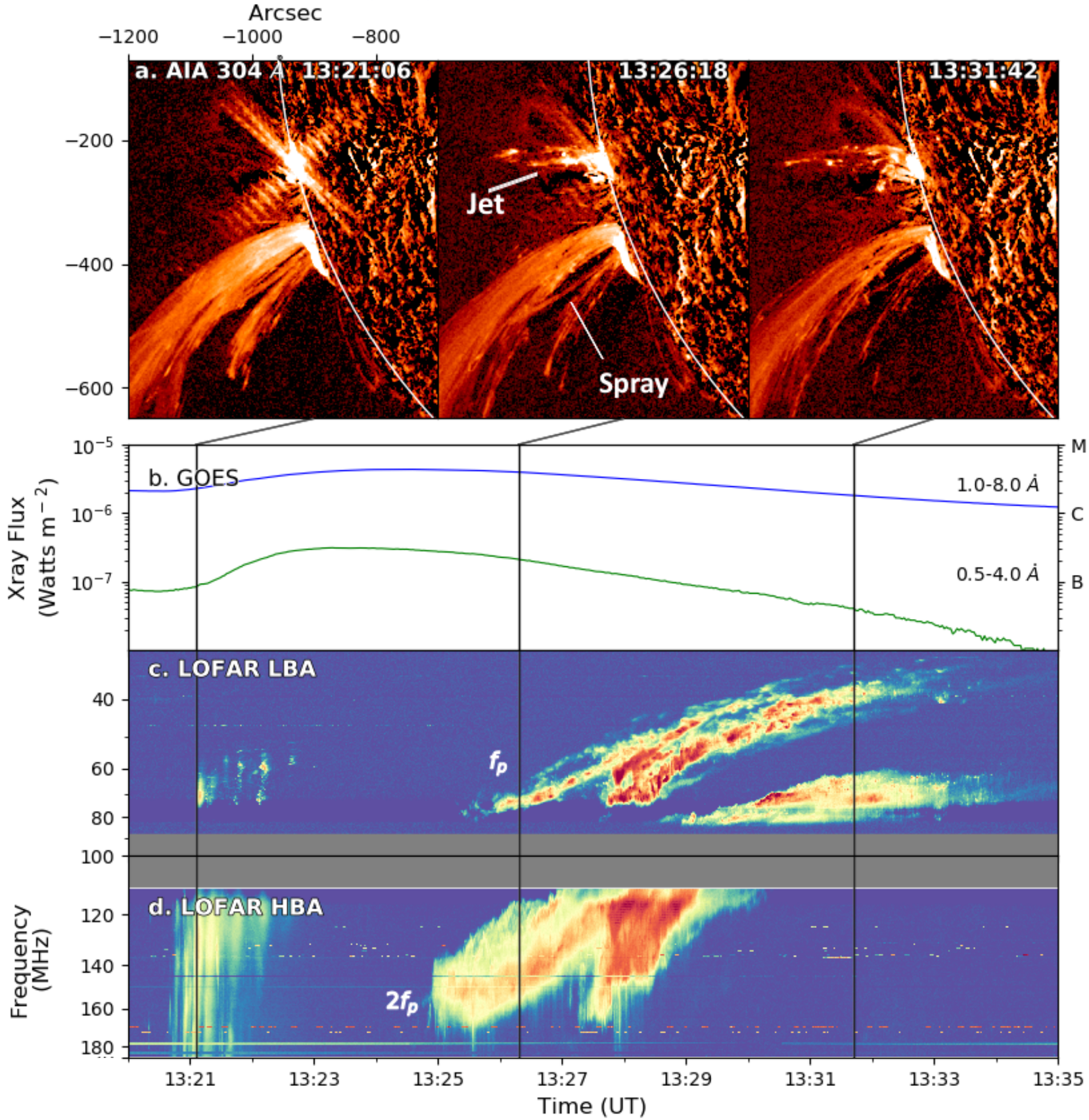
16 October 2015

EUV

X-ray

Radio



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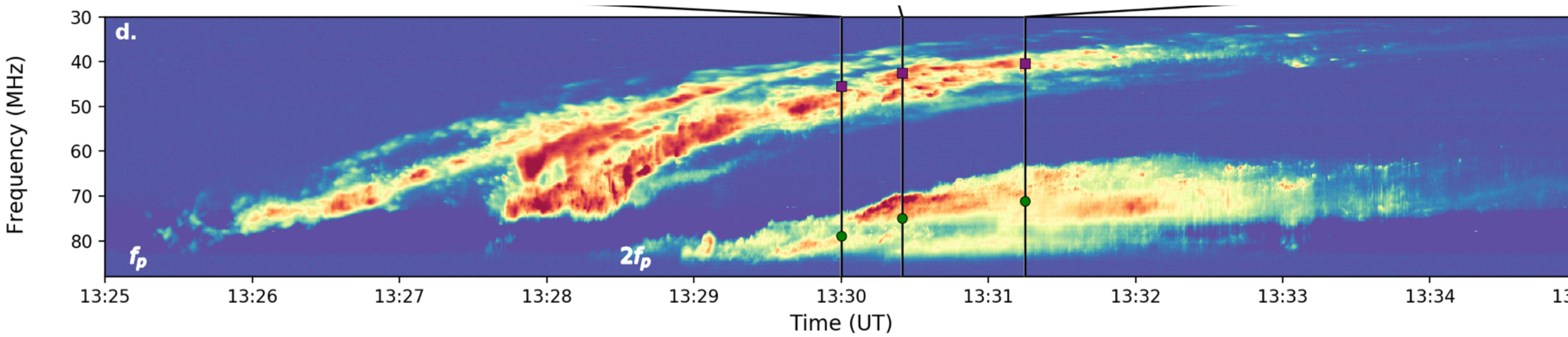
Type II Imaging



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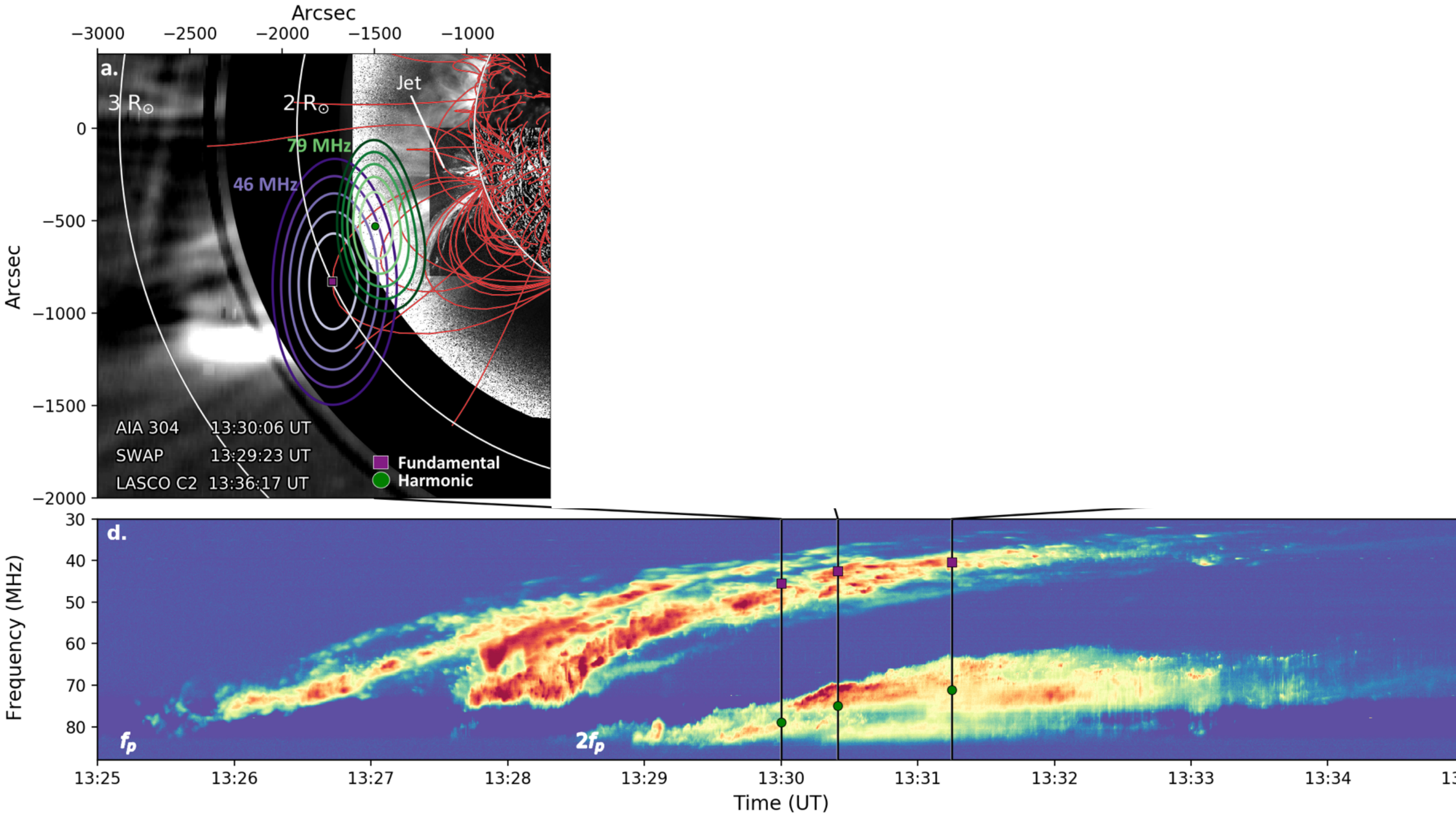

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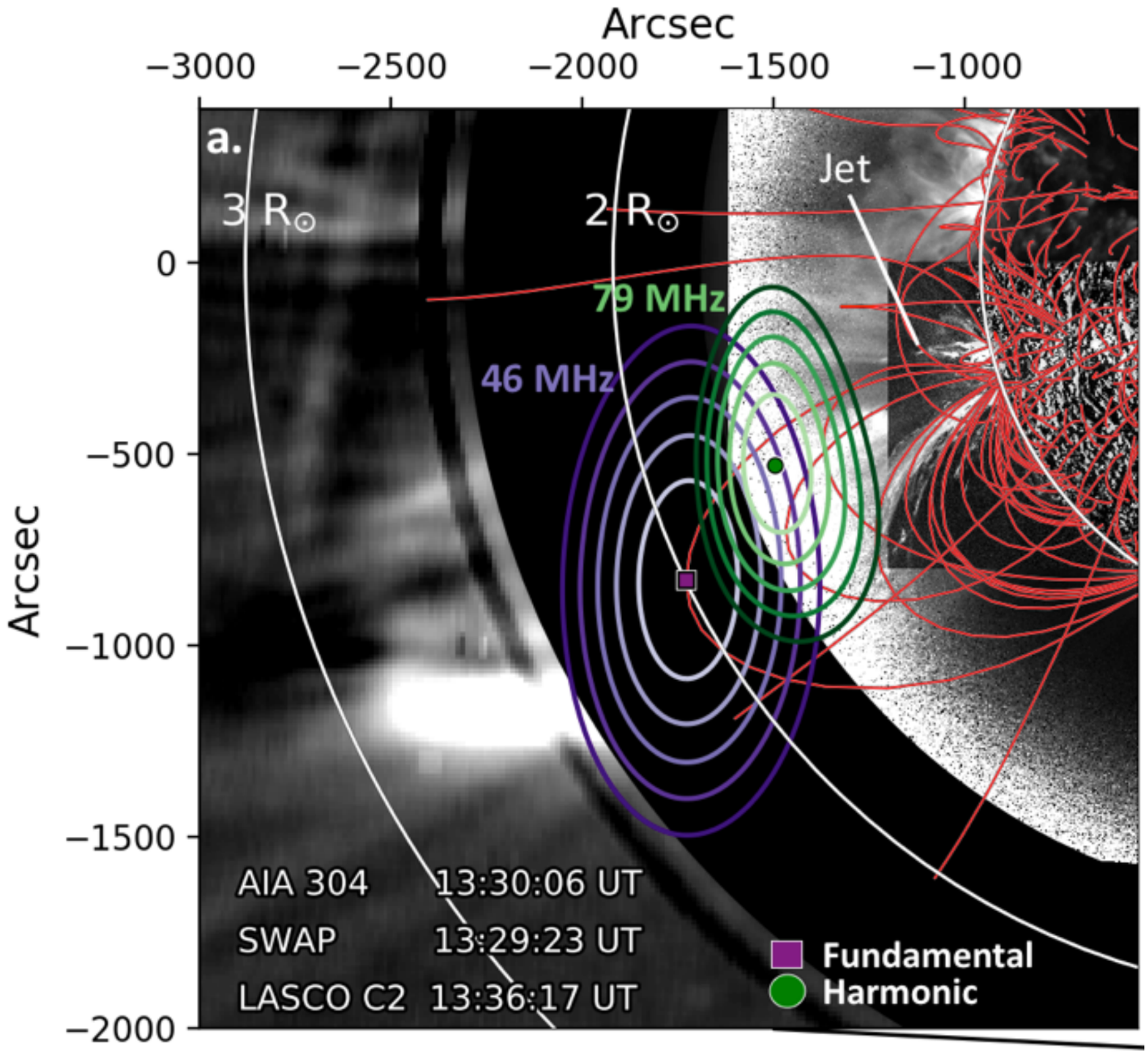

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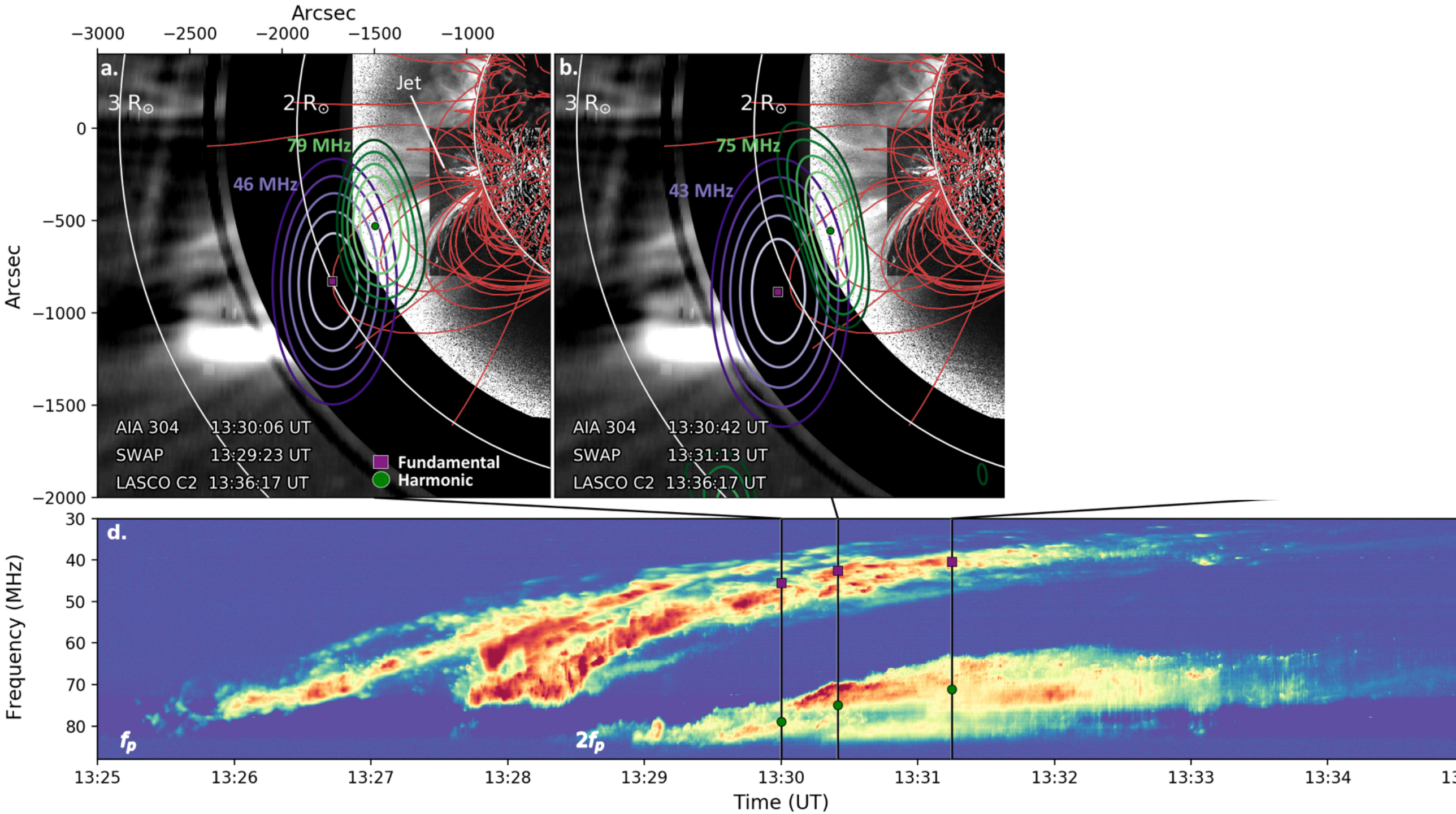

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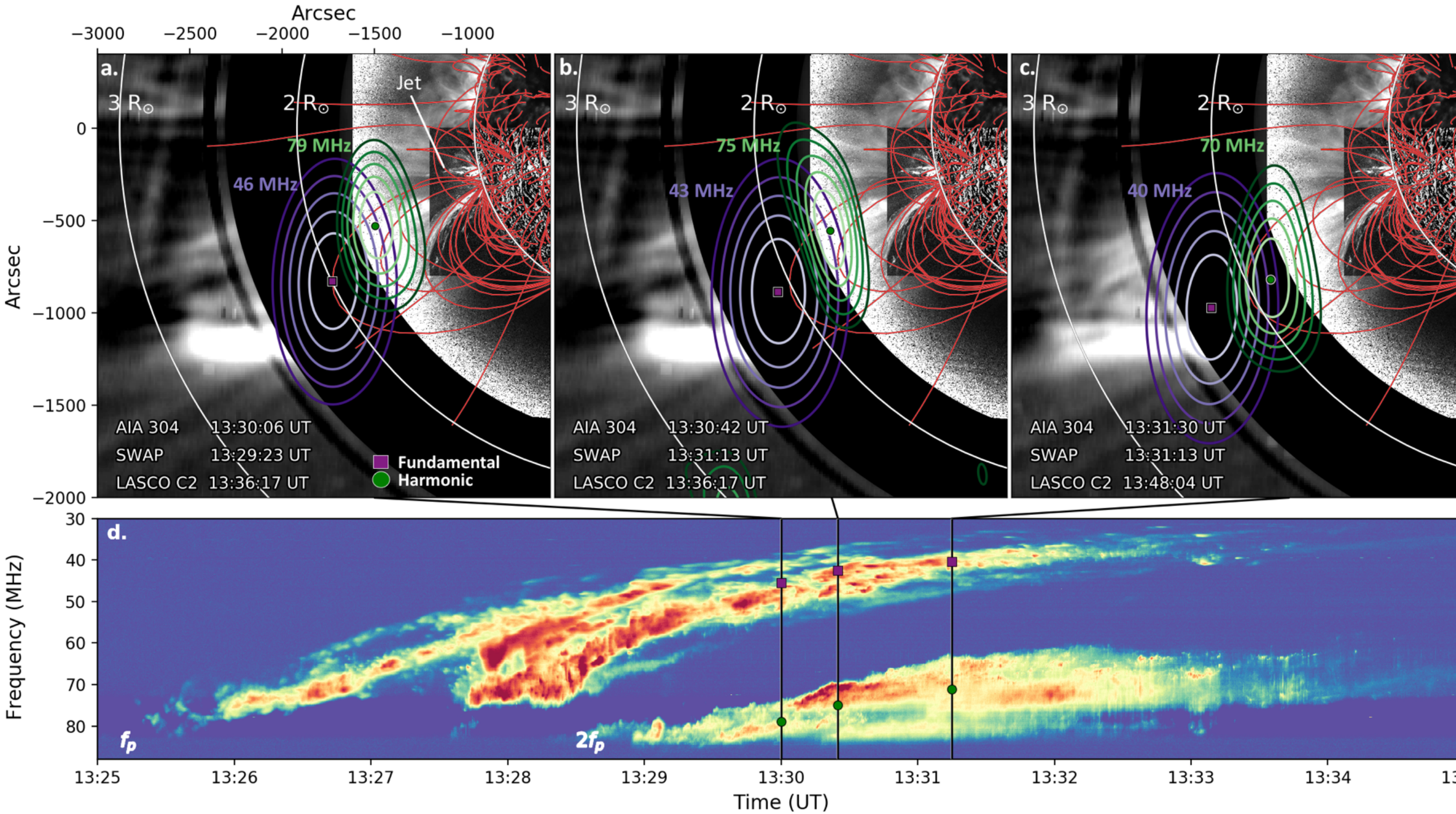

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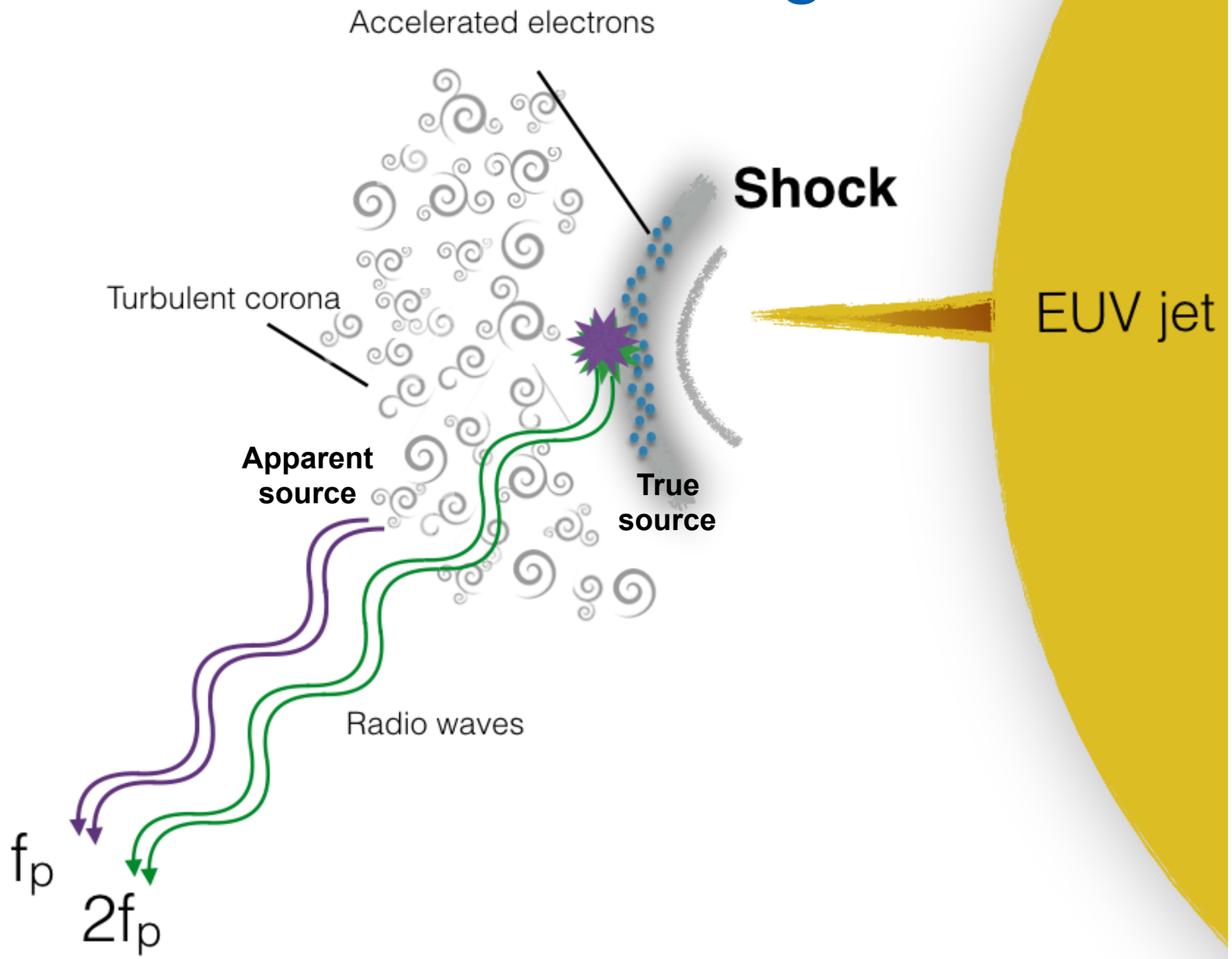
Radio wave scattering



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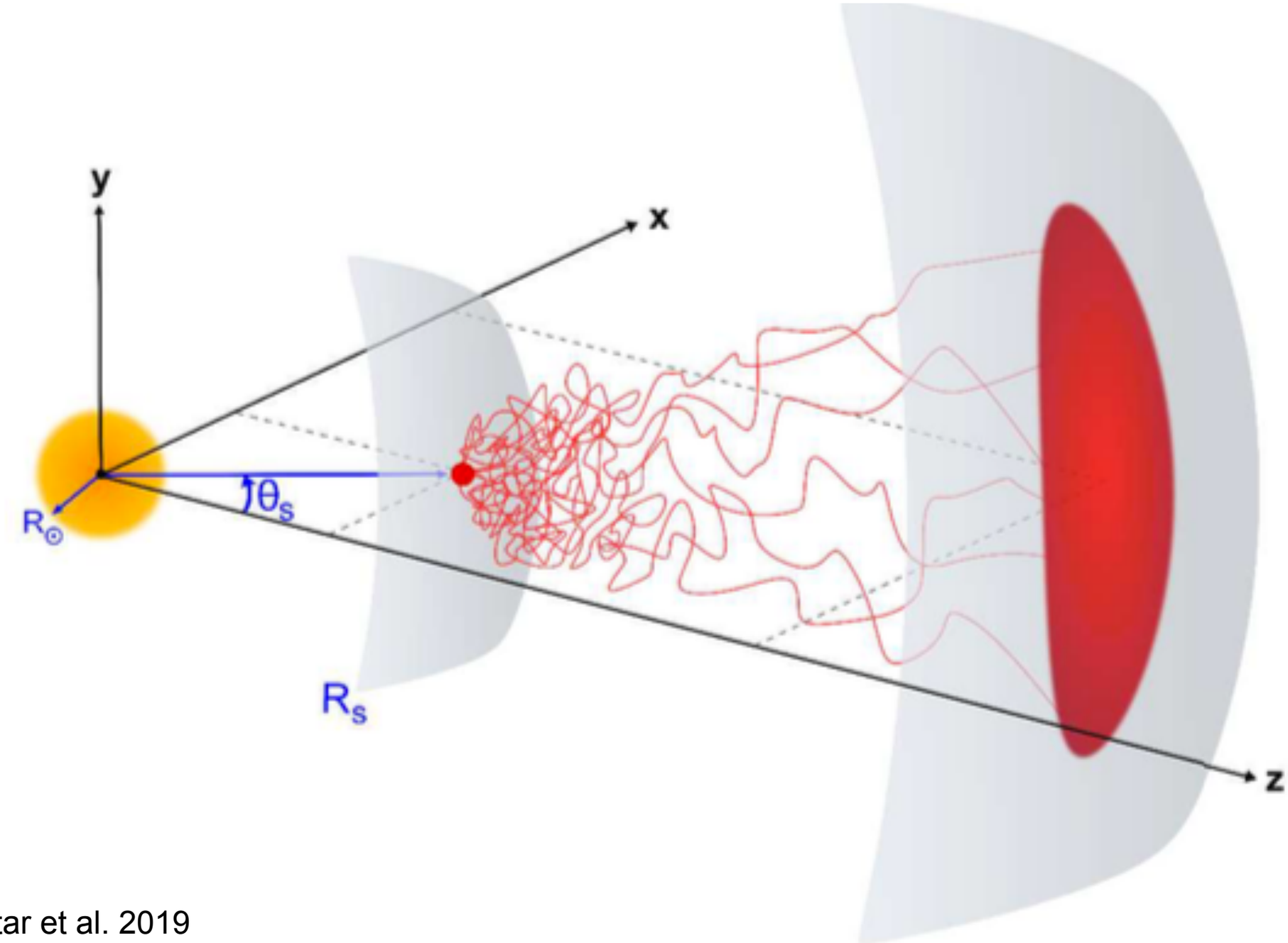
Radio wave scattering

$$\tau(r) = \int_r^{1AU} \pi \frac{f_{pe}^4(r)}{(f^2 - f_{pe}^2(r))^2} \frac{\epsilon^2}{h} dr$$

Chrysaphi et al. 2018



Kontar et al. 2019

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Radio wave scattering

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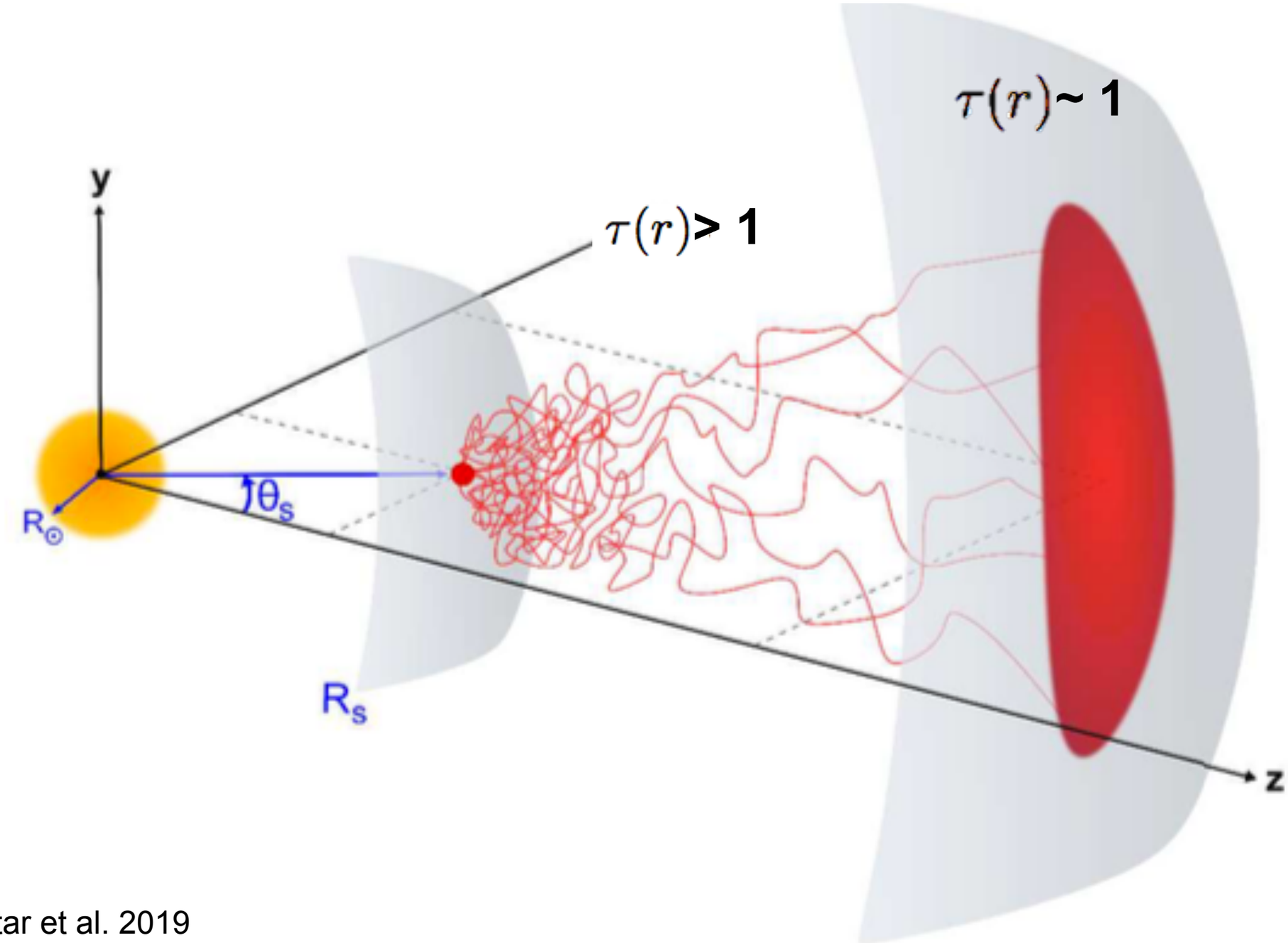
Chrysaphi et al. 2018



Kontar et al. 2019

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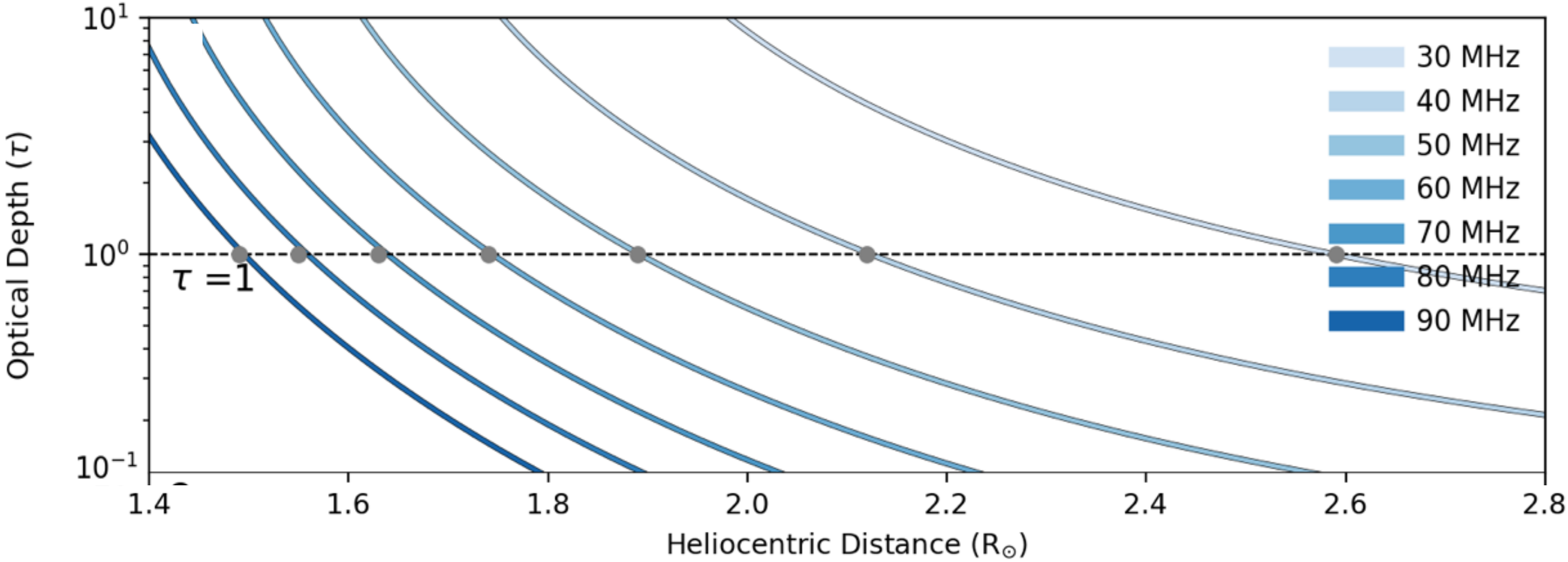
Radio wave scattering

$$\tau(r) = \int_{r}^{1AU} \pi \frac{f_{pe}^4(r)}{(f^2 - f_{pe}^2(r))^2} \frac{\epsilon^2}{h} dr \quad \textbf{= 1}$$



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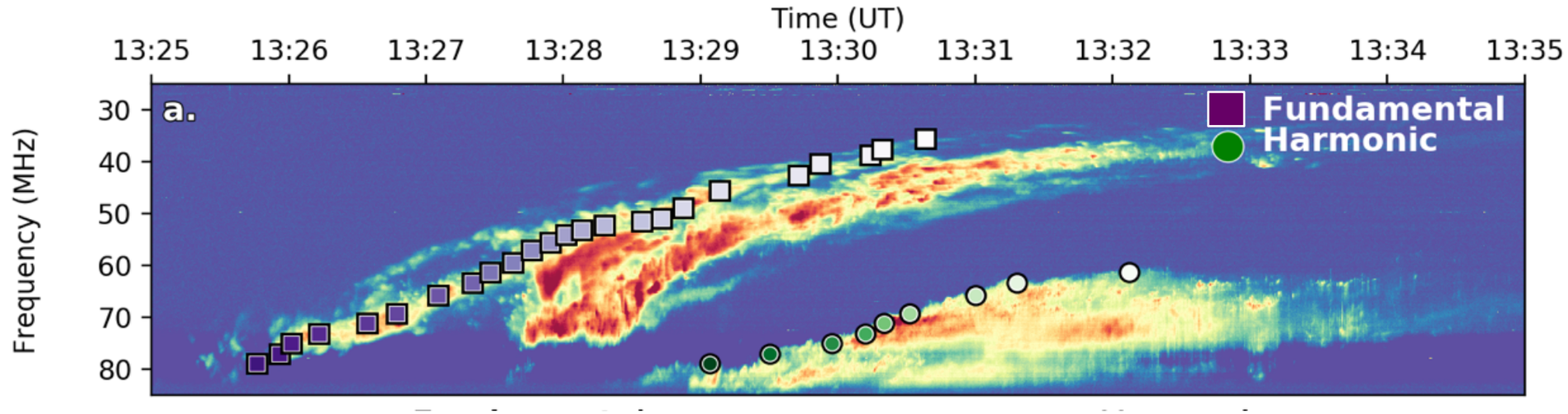

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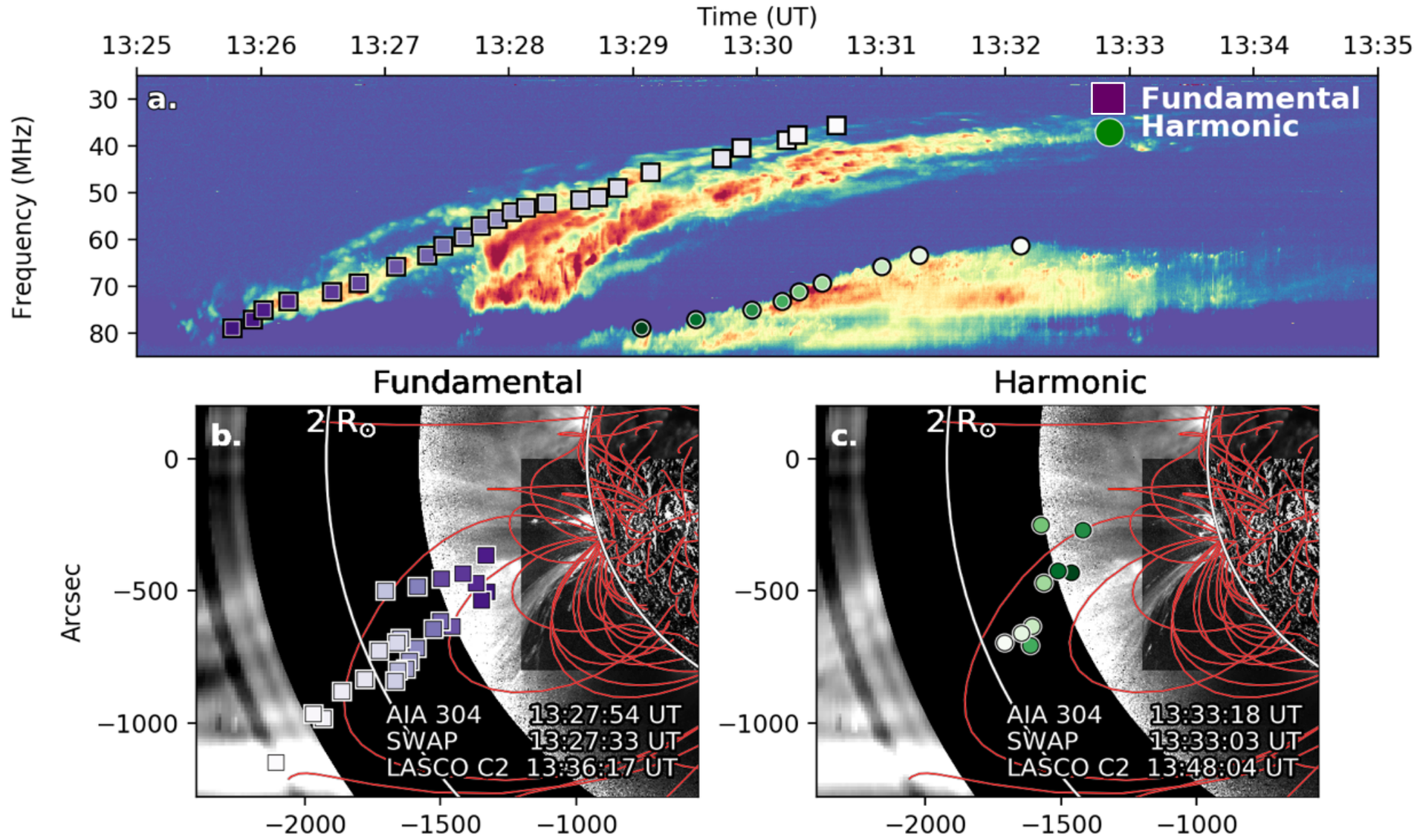

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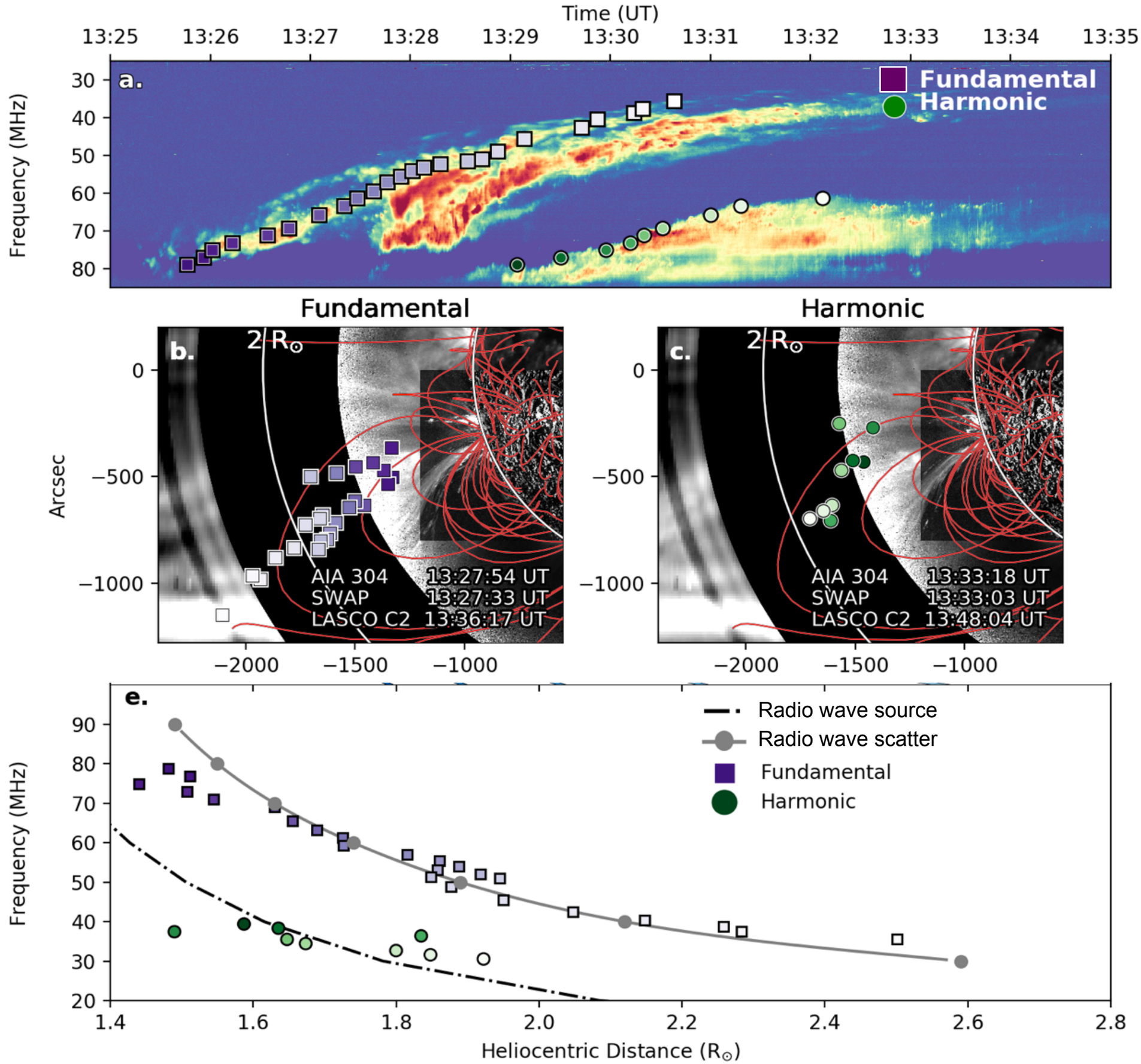

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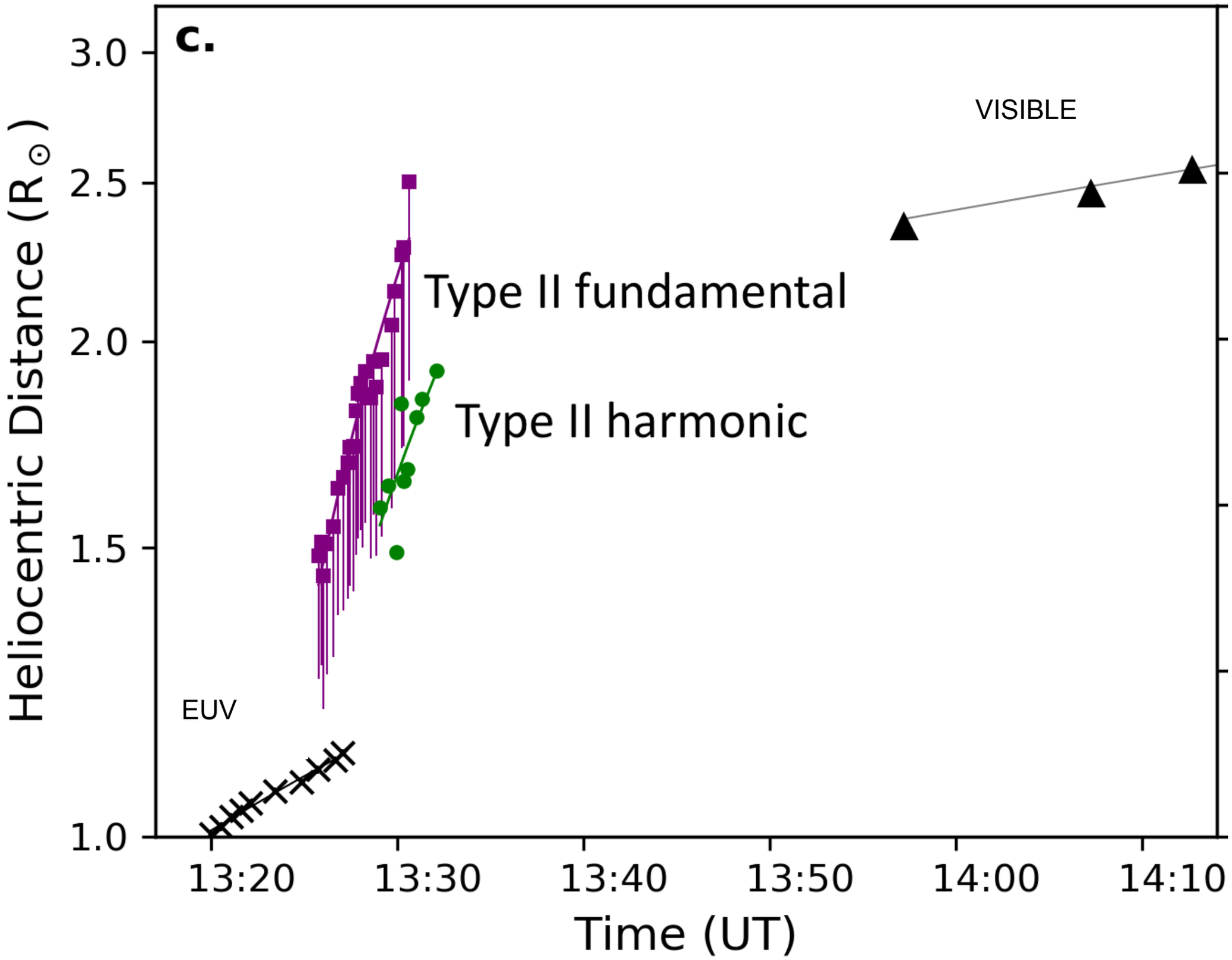
Shock origin



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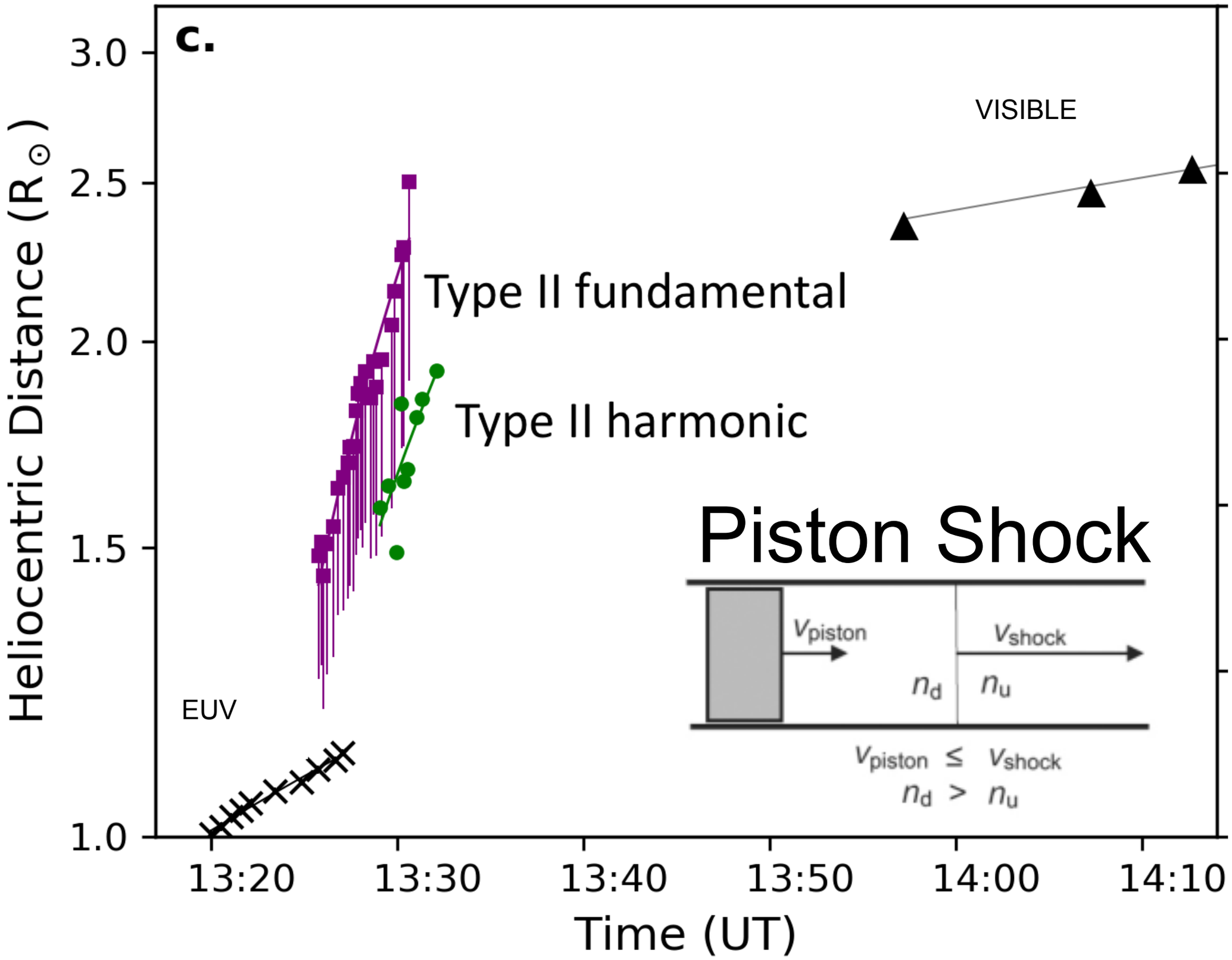
Shock origin



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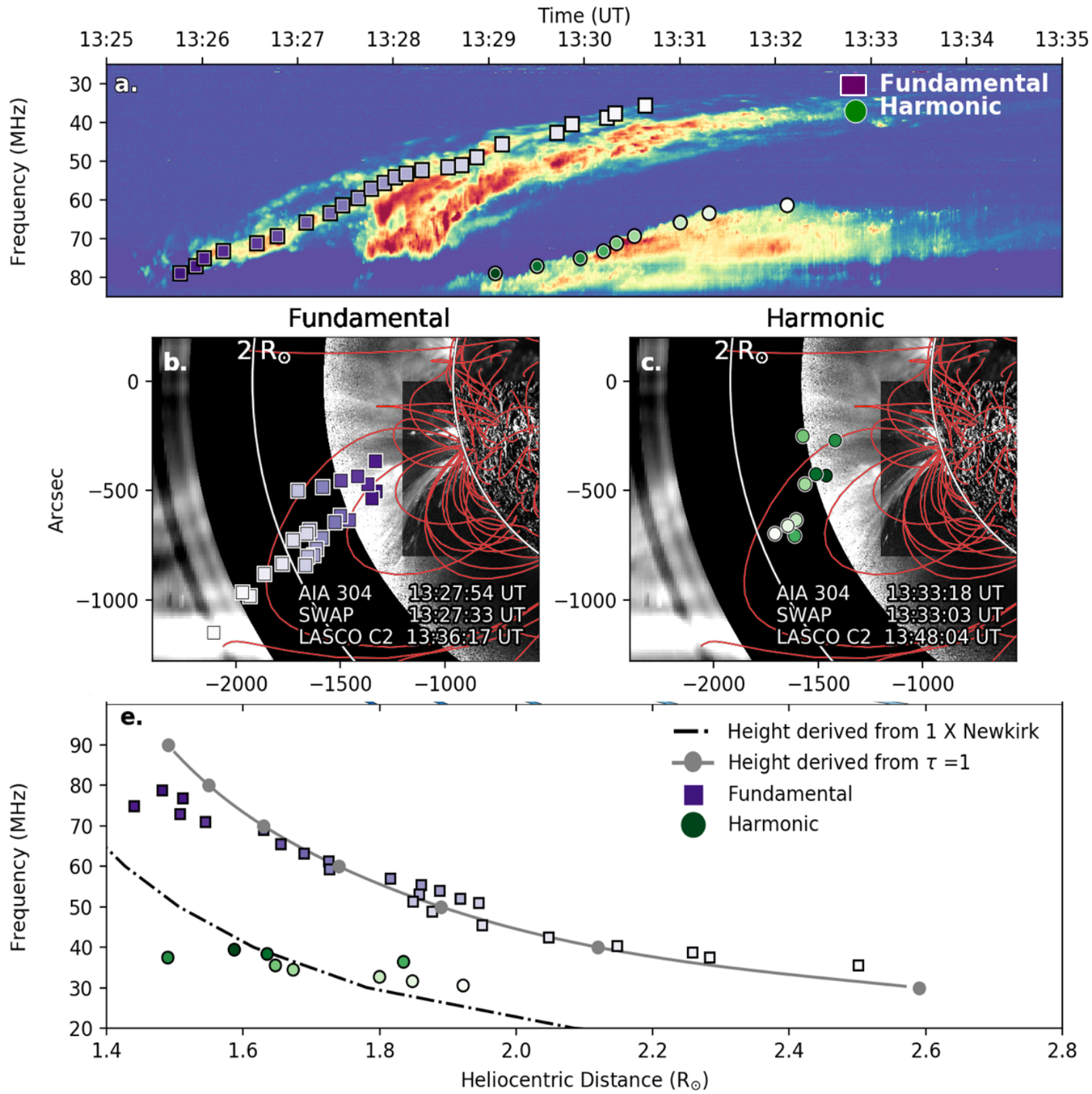
SQ2. Can solar radio bursts tell us about the shock origin?

- First LOFAR interferometric observation of both f_p and $2f_p$ emission of type II radio burst.

- Correct for effects of radio wave scattering with model

- Jet-driven piston shock



LOFAR observations of a jet-driven piston shock in the low solar corona, *Maguire et al. ApJ, 2021*

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