

Stripping of cluster satellites

Kyle Oman (Kapteyn Institute)

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Combine orbits of simulated galaxy clusters...

[Public Multidark Cosmological Simulations arxiv:1109.0003]

...and observations of galaxies...

[Coma cluster compilation by J. Healy]

...to constrain physics of gas stripping.

$$\begin{pmatrix} \text{Orbital} \\ \text{statistics} \end{pmatrix} * \begin{pmatrix} \text{Model for} \\ \text{stripping} \end{pmatrix} = \begin{pmatrix} \text{Galaxy} \\ \text{properties} \end{pmatrix}$$

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Maximum likelihood estimator

Parameter values

$$\underbrace{\left(\begin{array}{c} \text{Orbital} \\ \text{statistics} \end{array} \right) * \left(\begin{array}{c} \text{Model for} \\ \text{stripping} \end{array} \right) = \left(\begin{array}{c} \text{Galaxy} \\ \text{properties} \end{array} \right)}_{\text{Maximum likelihood estimator}}$$

Parameter values

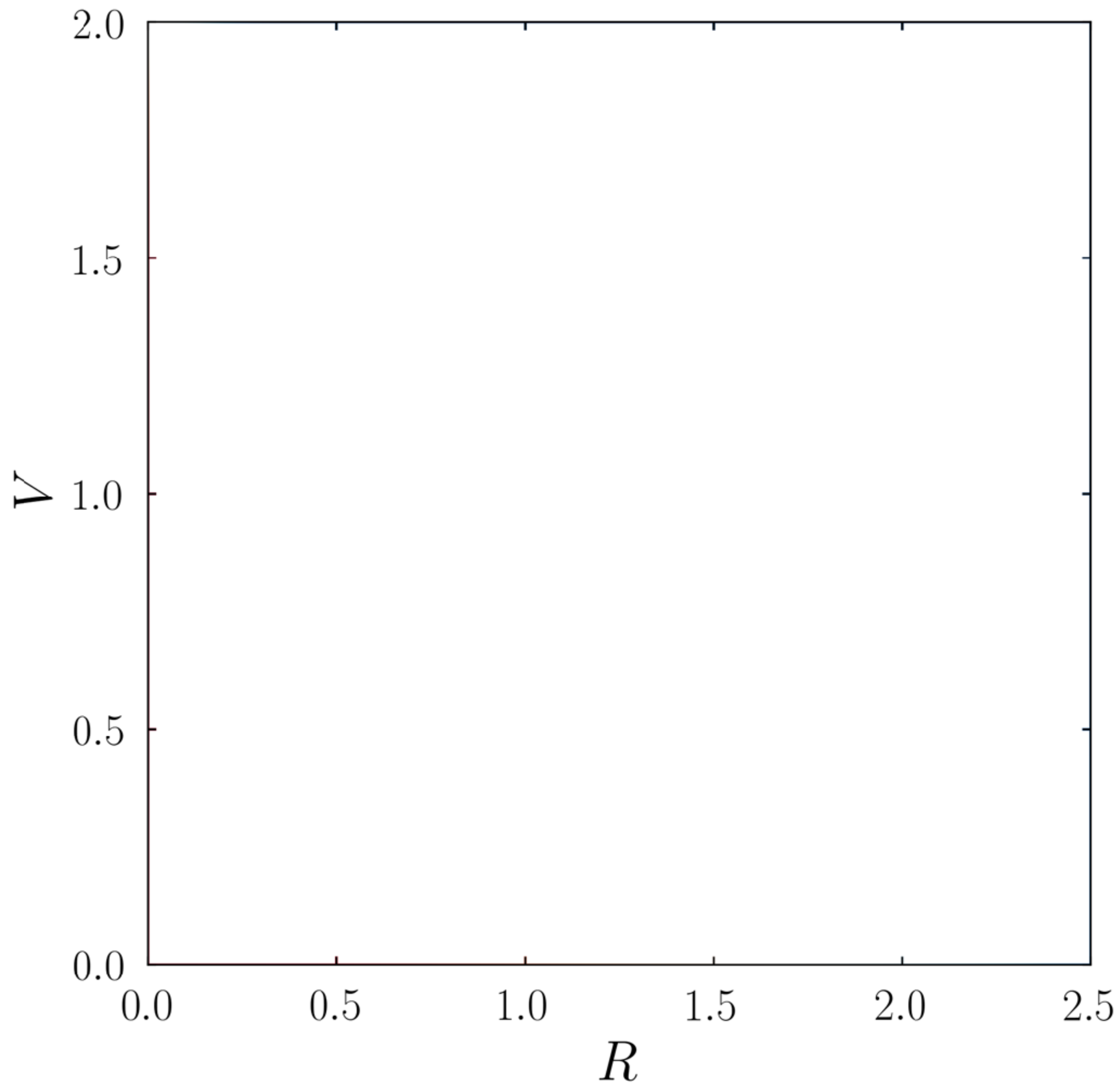
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Maximum likelihood estimator

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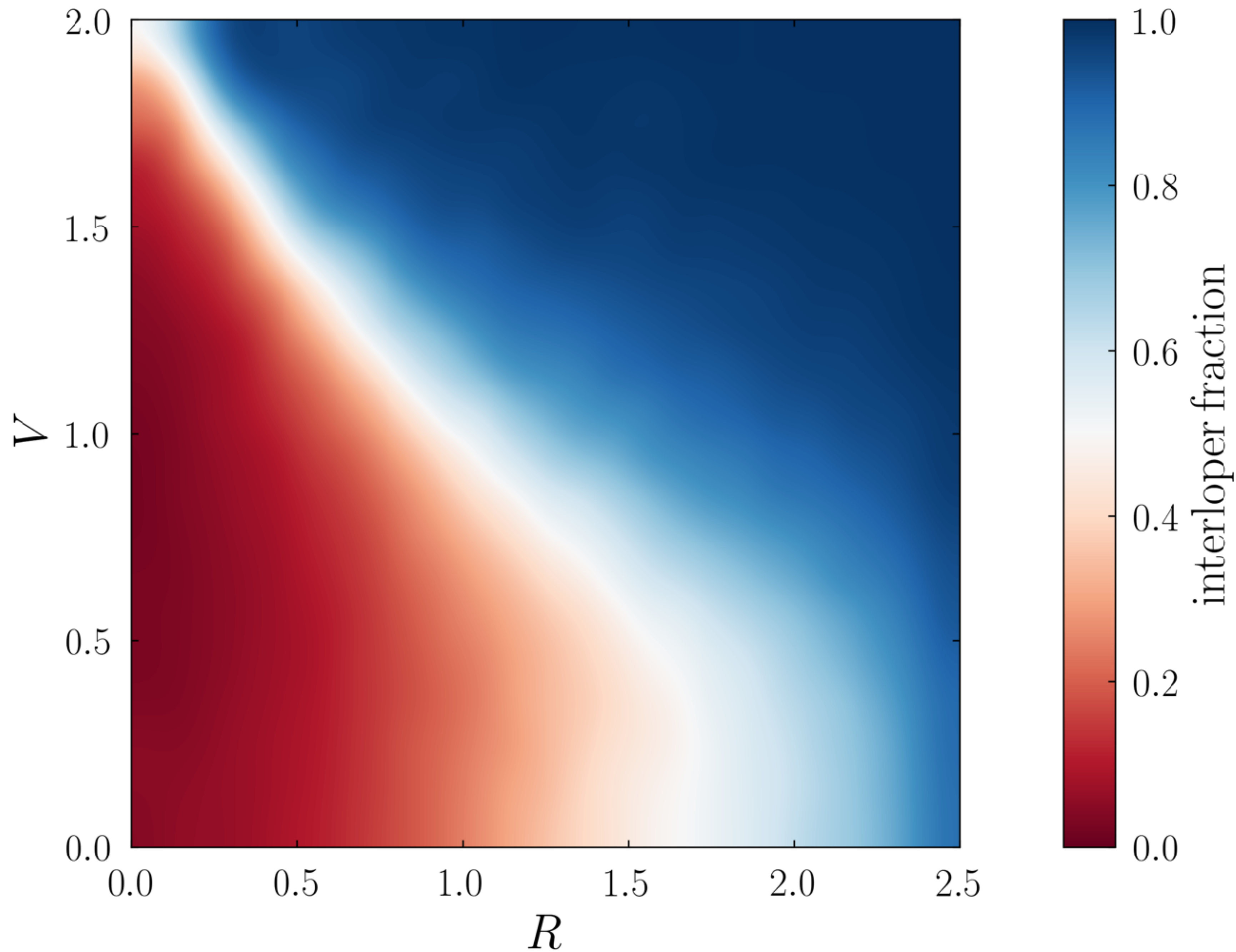
$$\underbrace{\left(\text{Orbital statistics} \right) * \left(\text{Model for stripping} \right)}_{\text{Maximum likelihood estimator}} = \left(\text{Galaxy properties} \right)$$

Parameter values



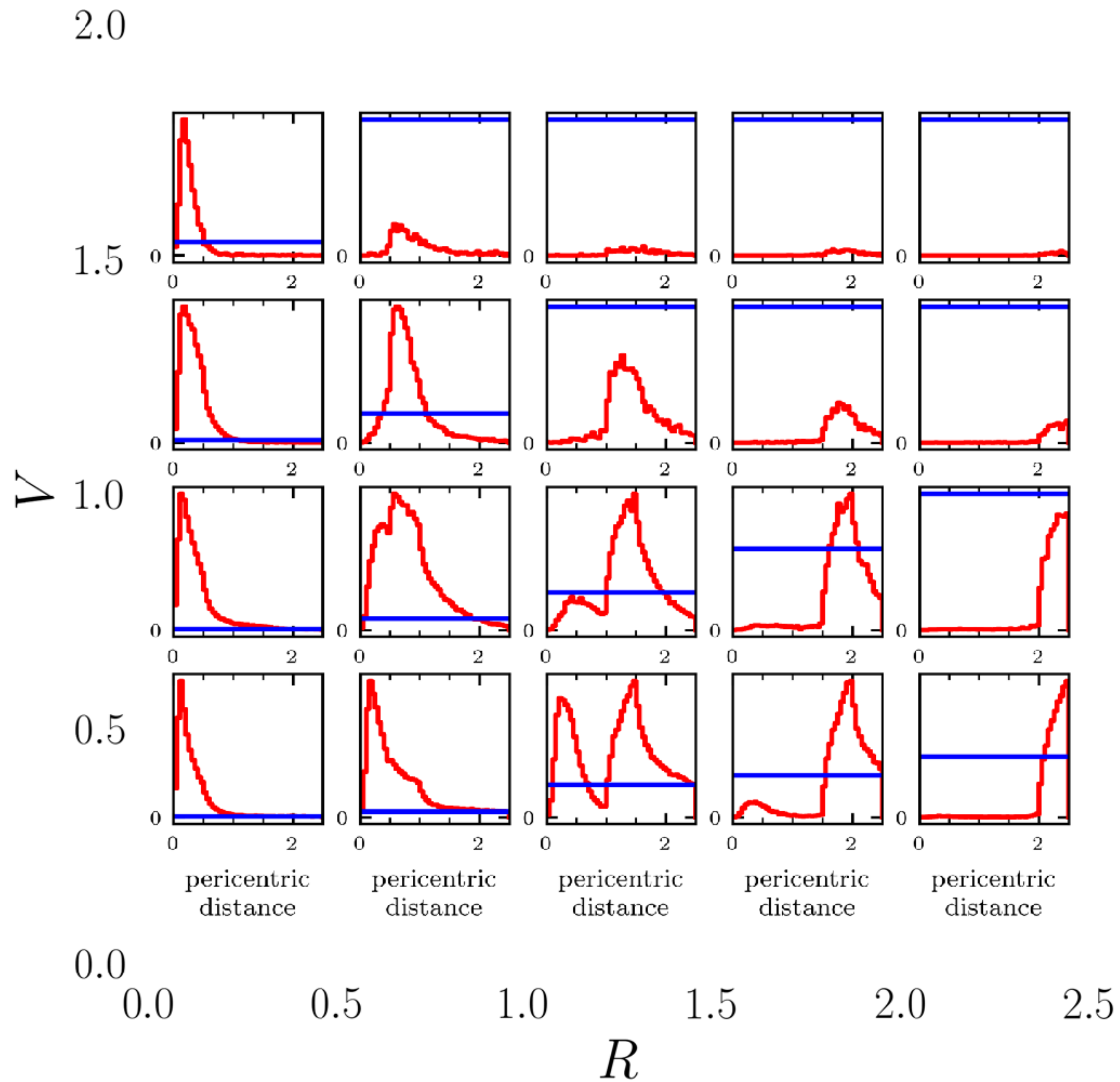
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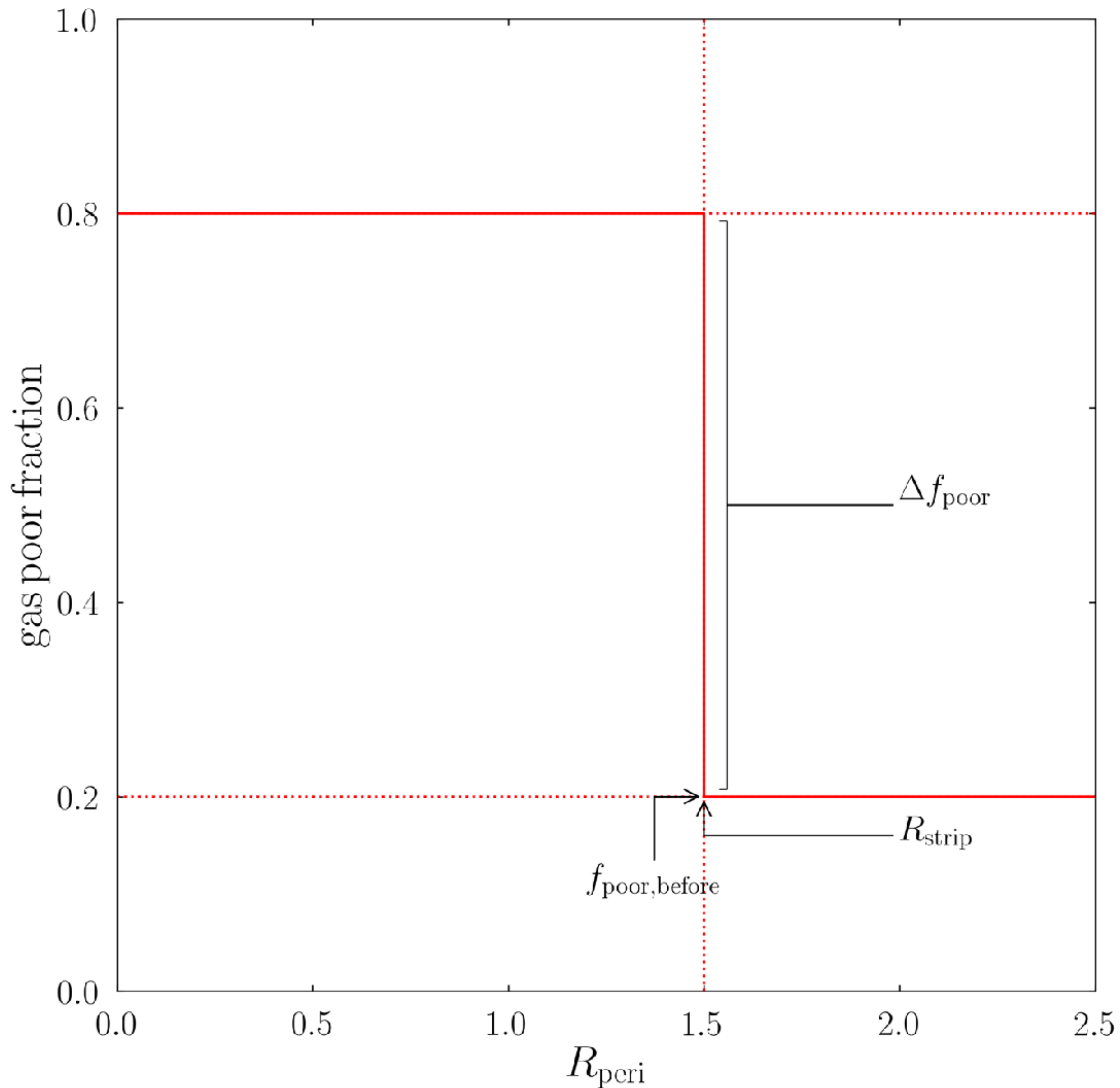
Parameter values



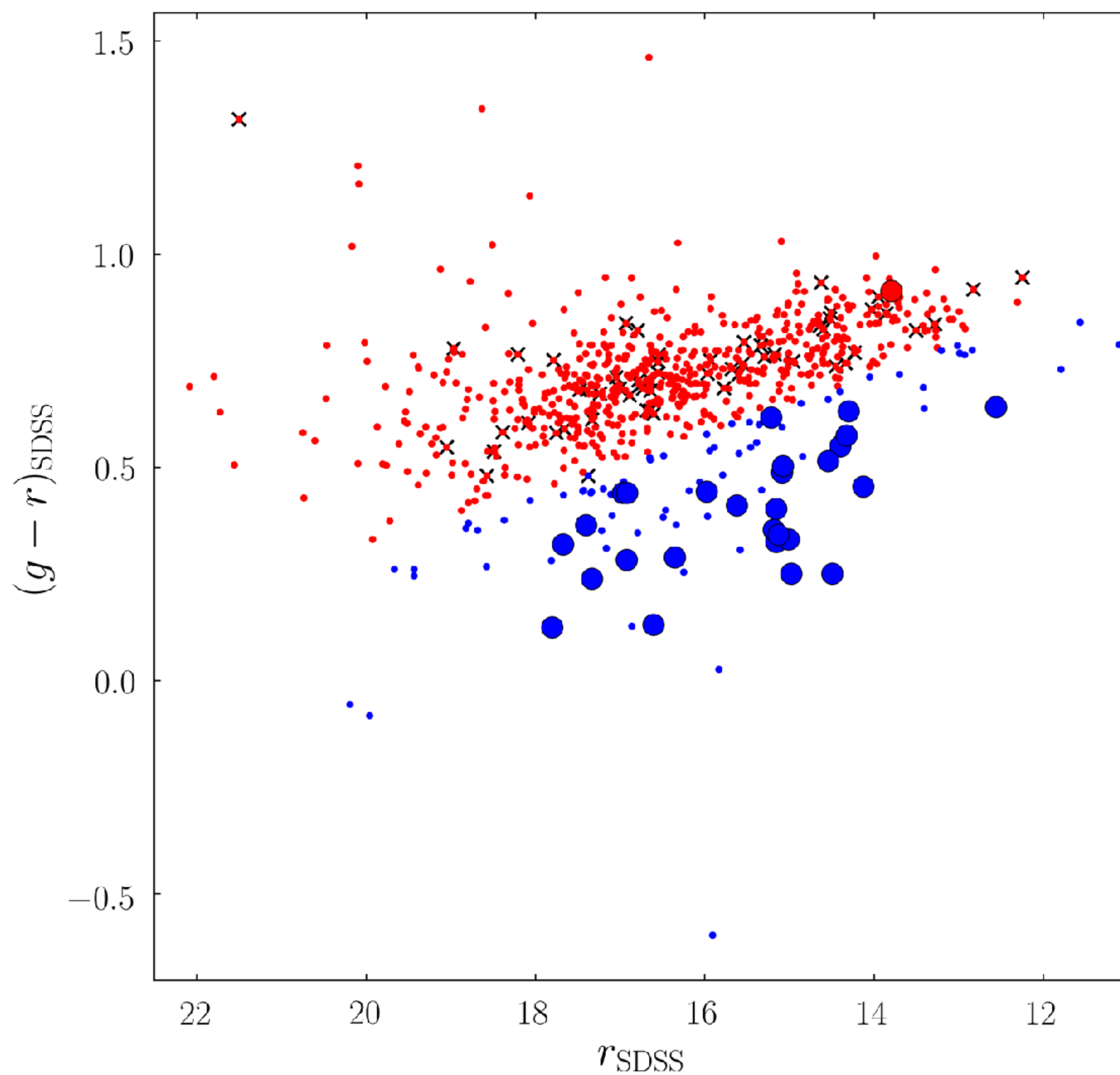
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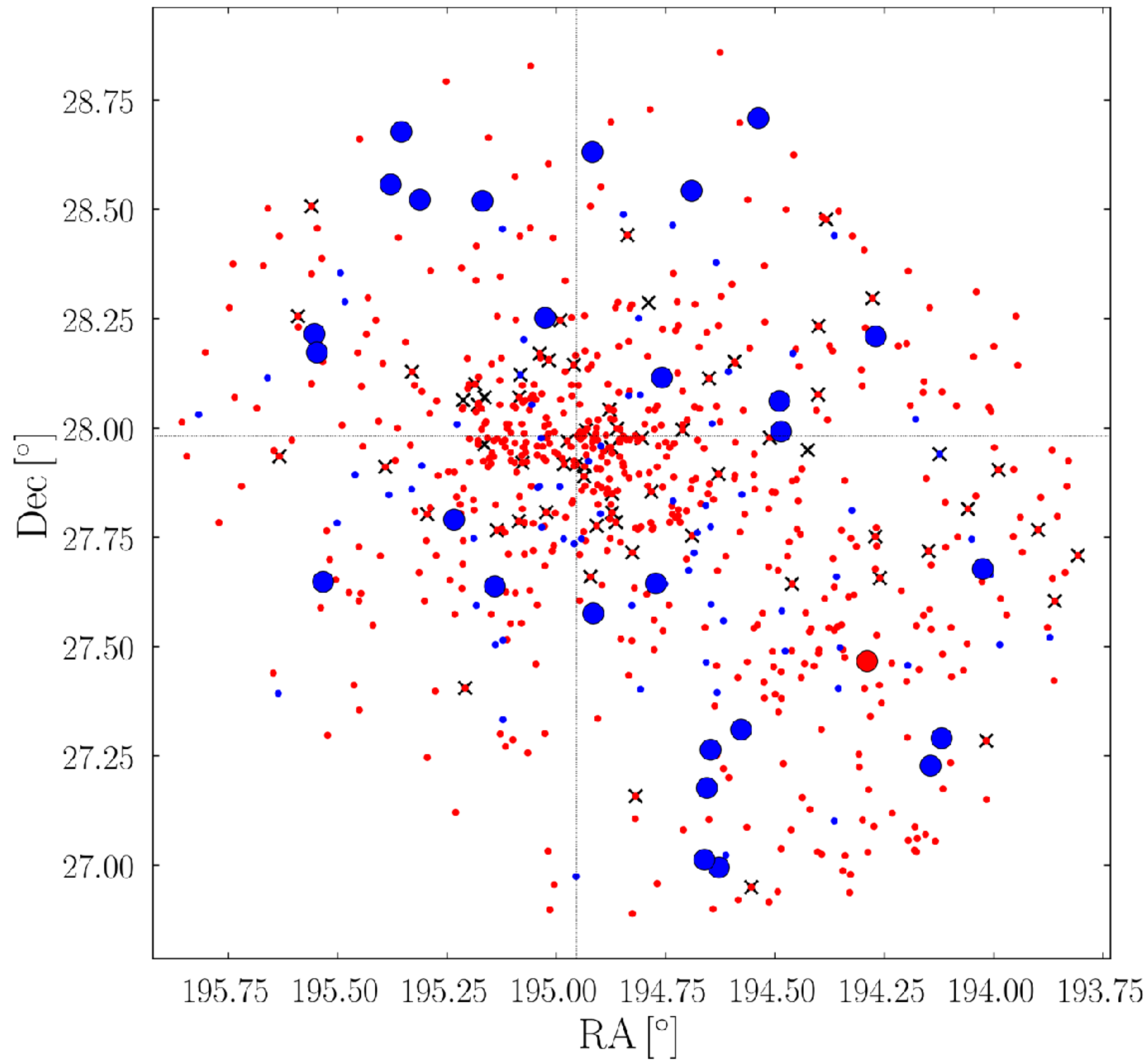
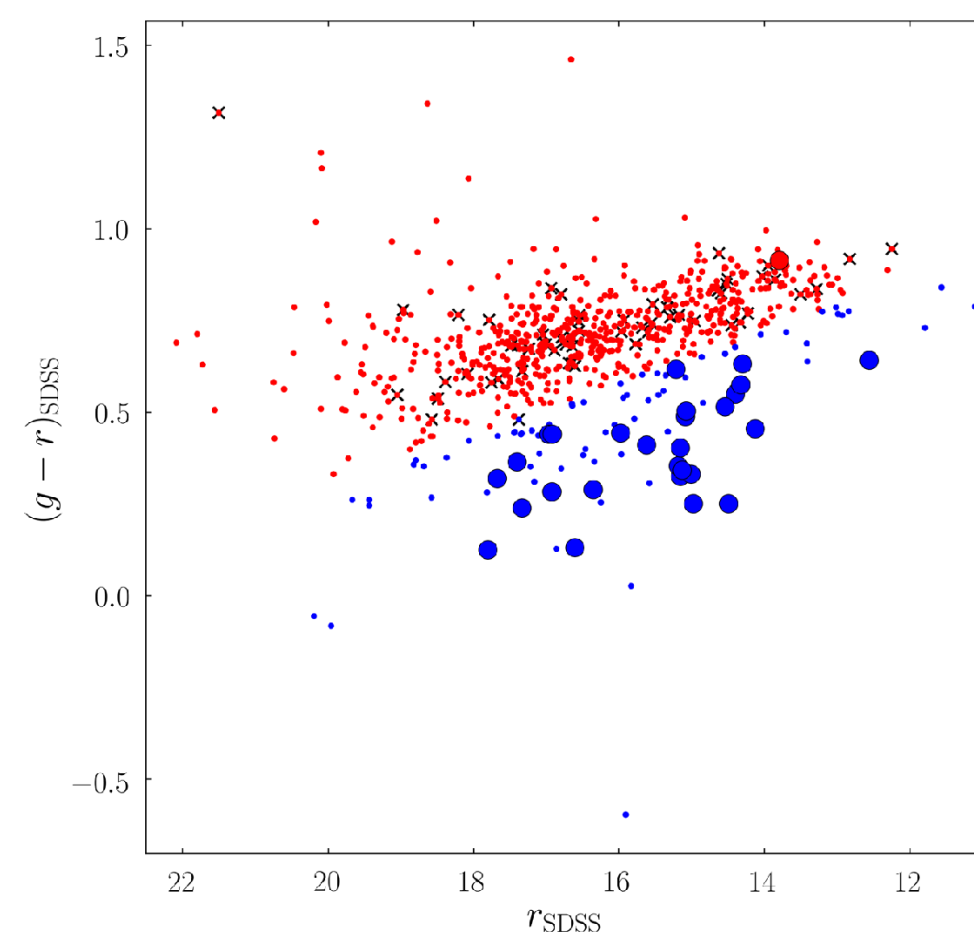
This is a toy model.



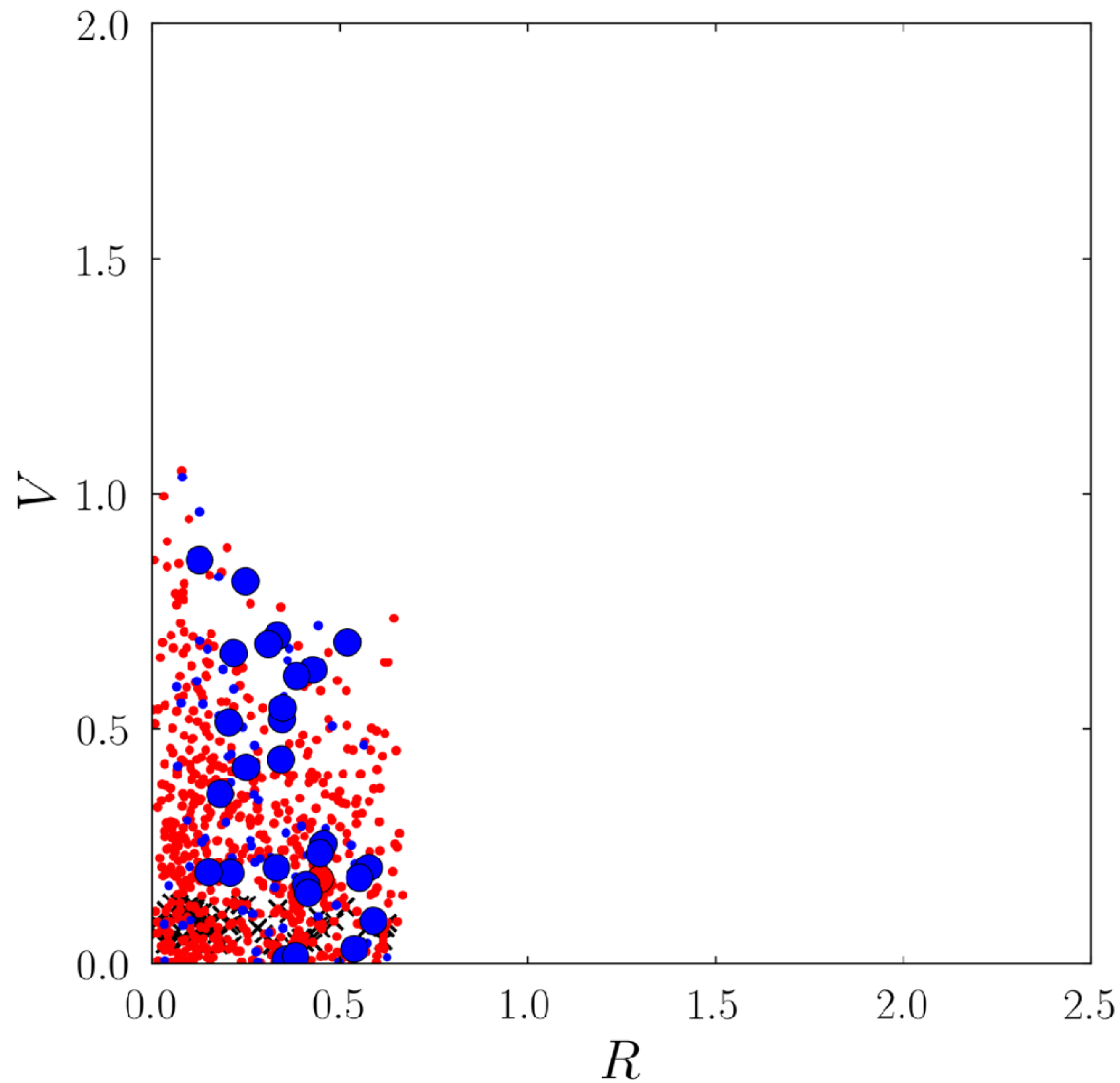
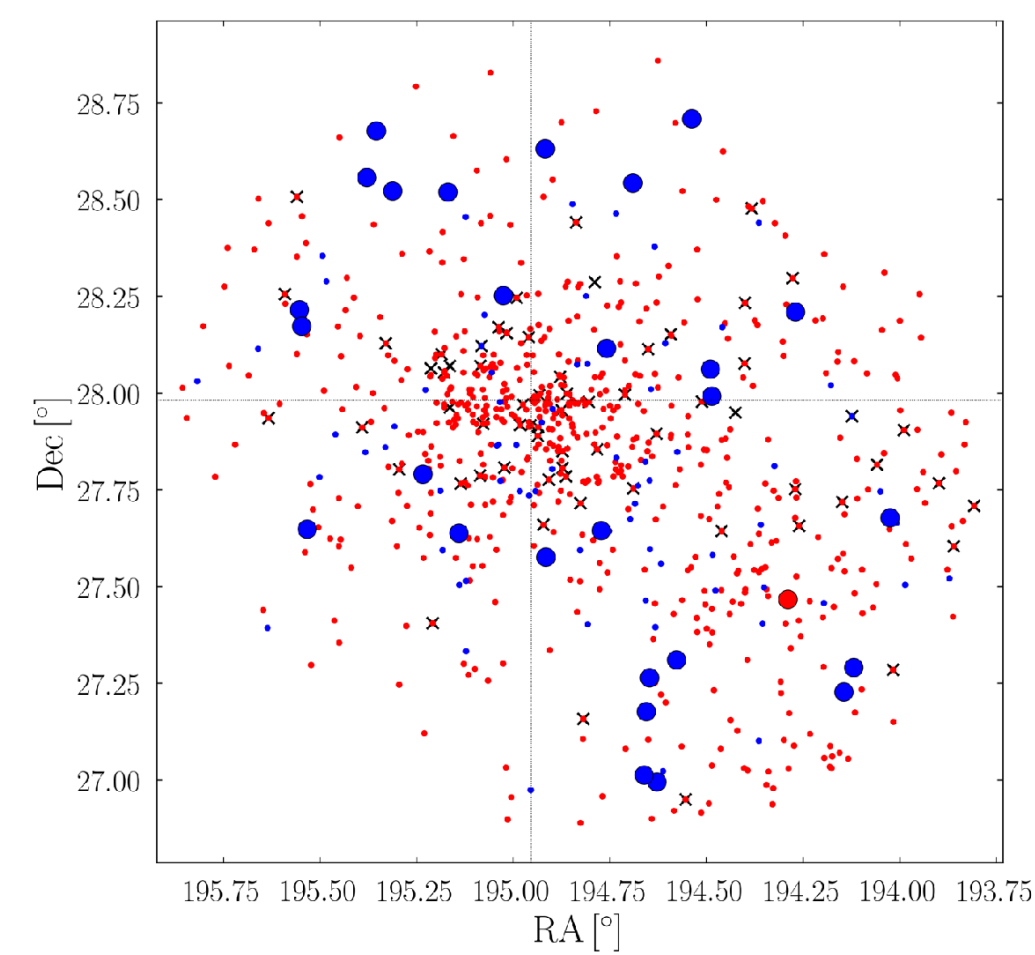
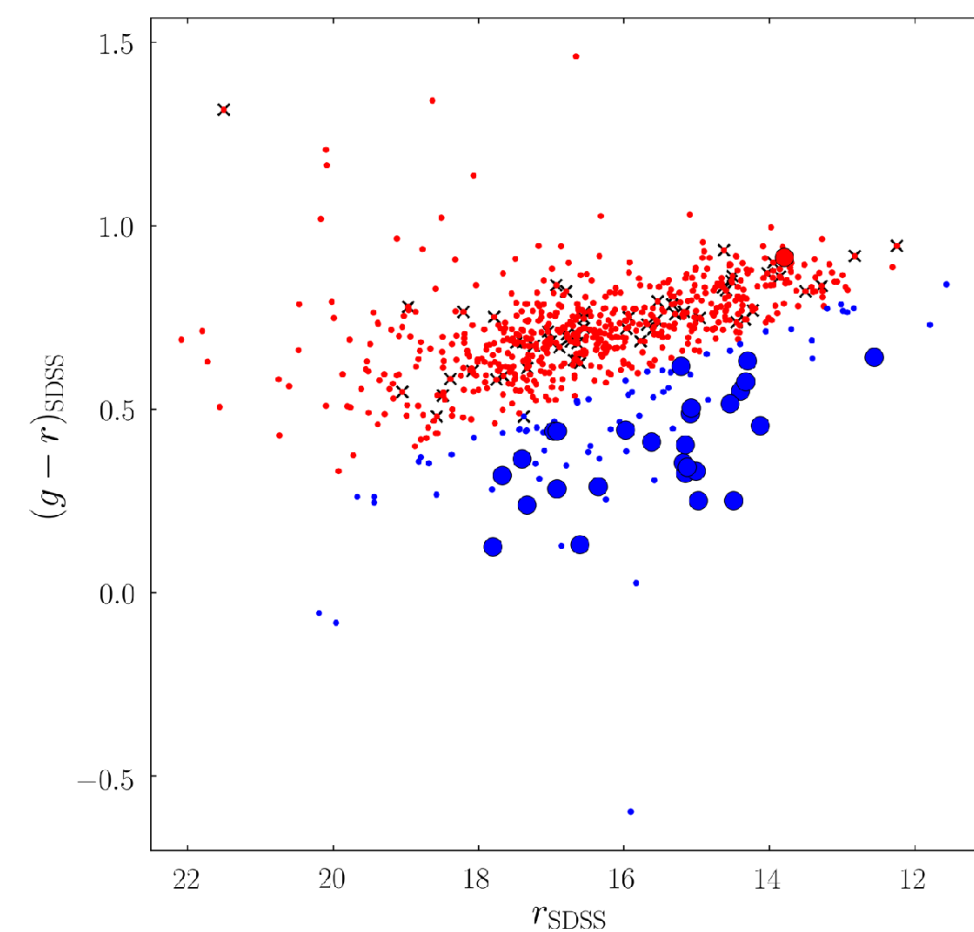
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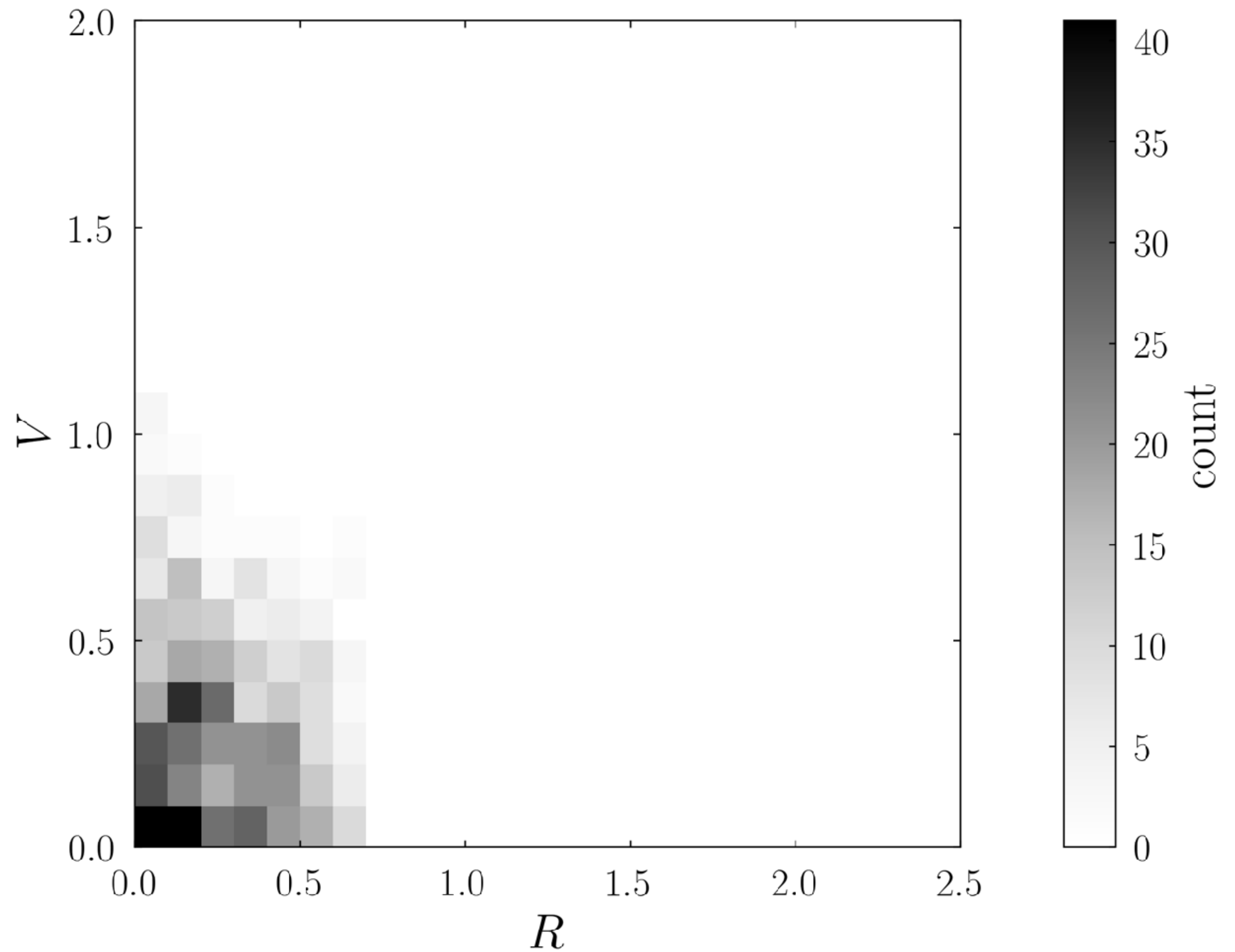
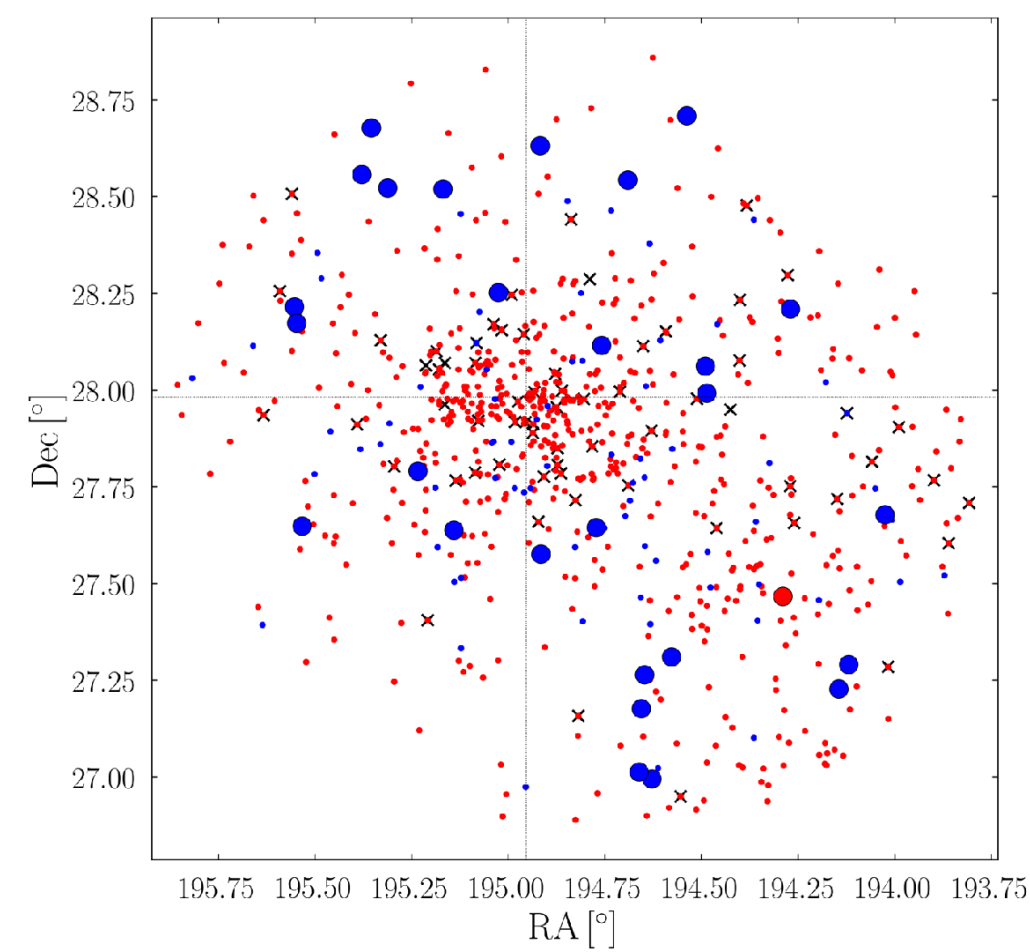
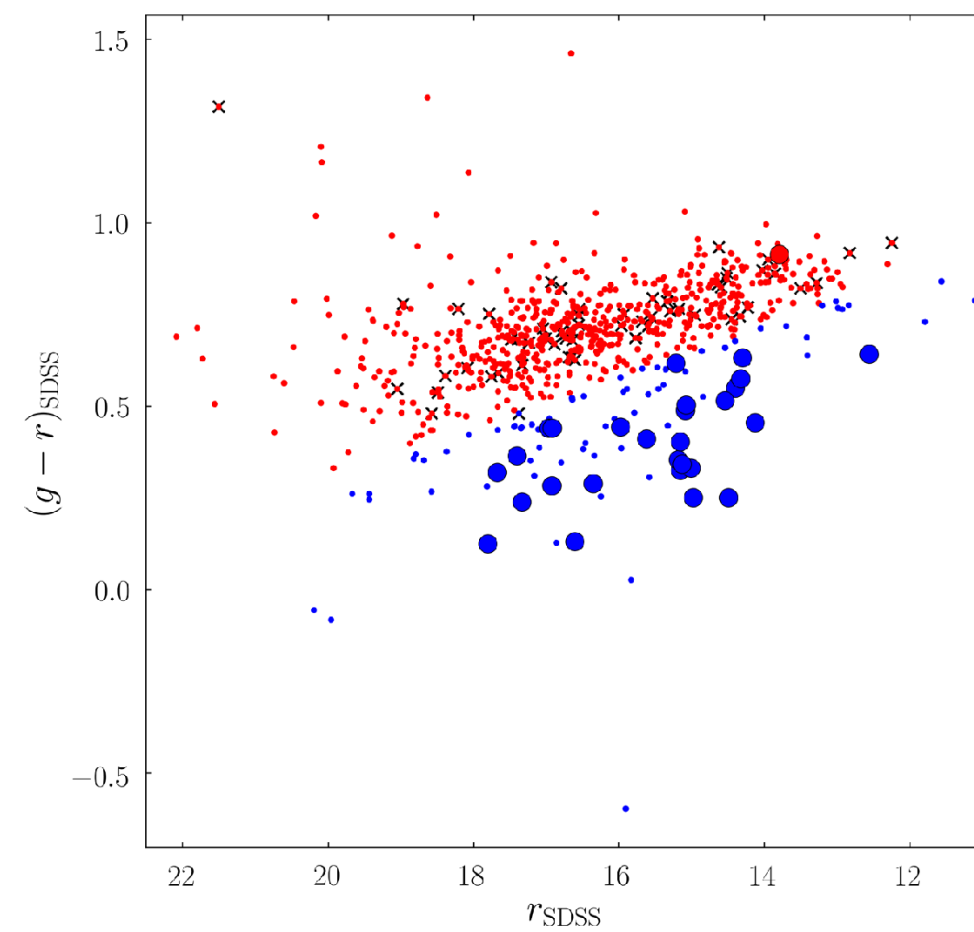
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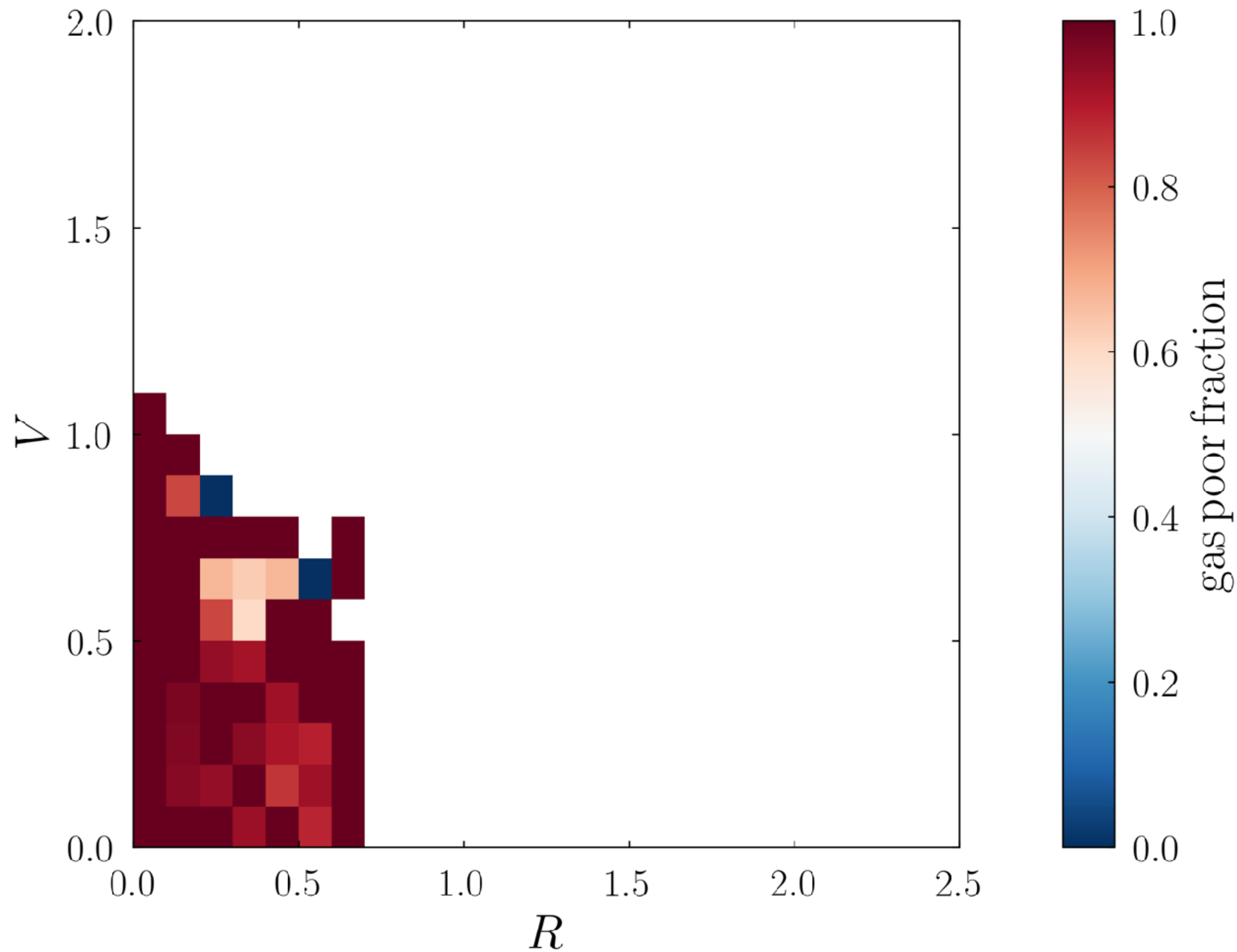
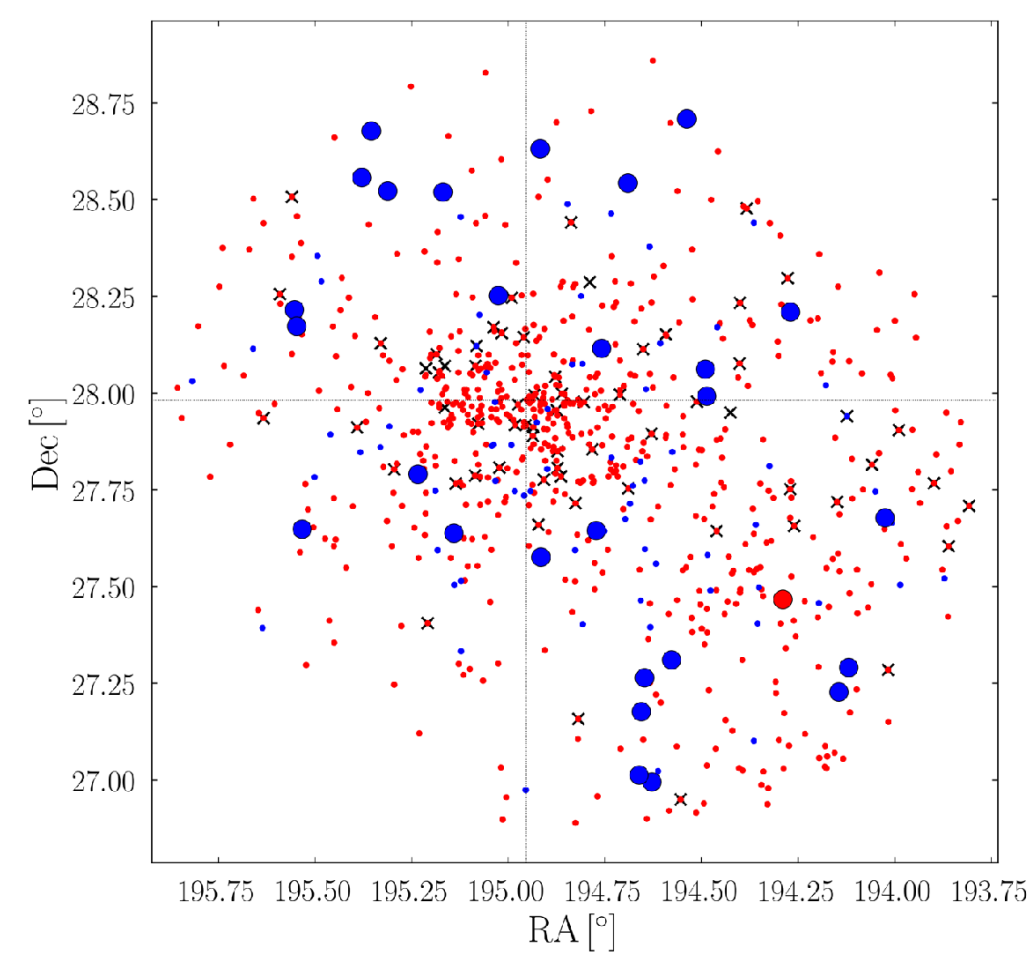
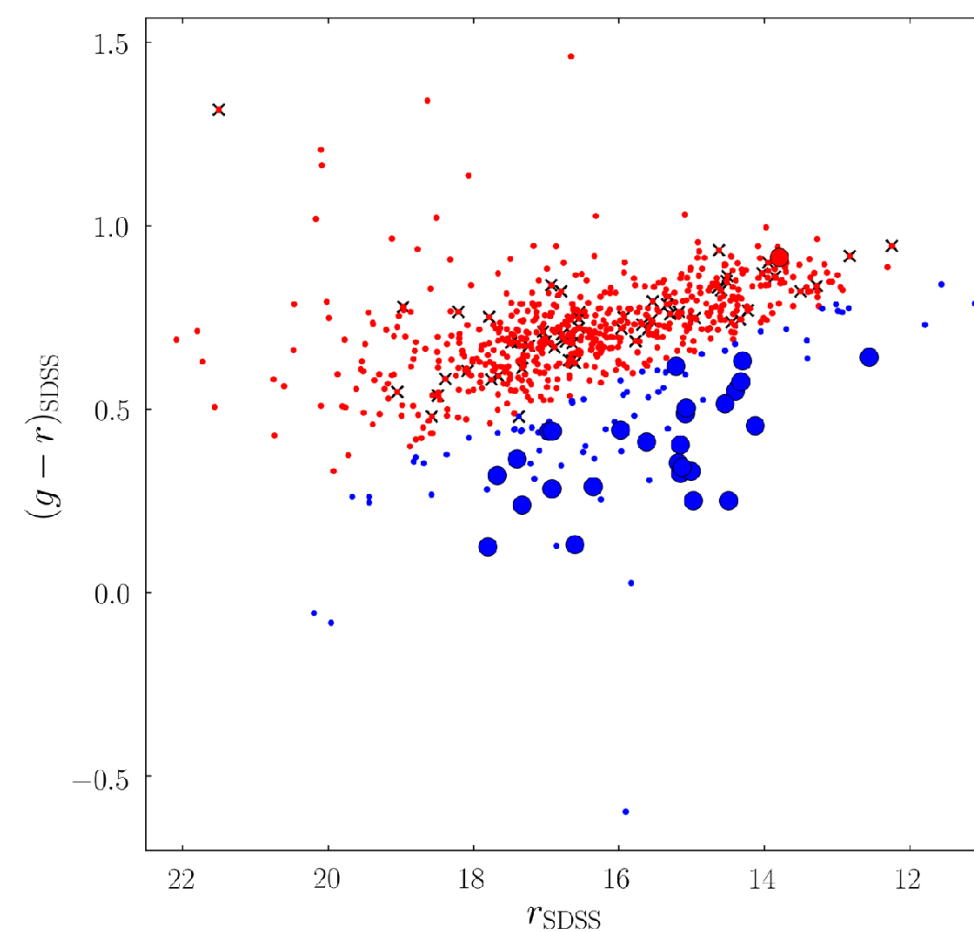
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Maximum likelihood estimator

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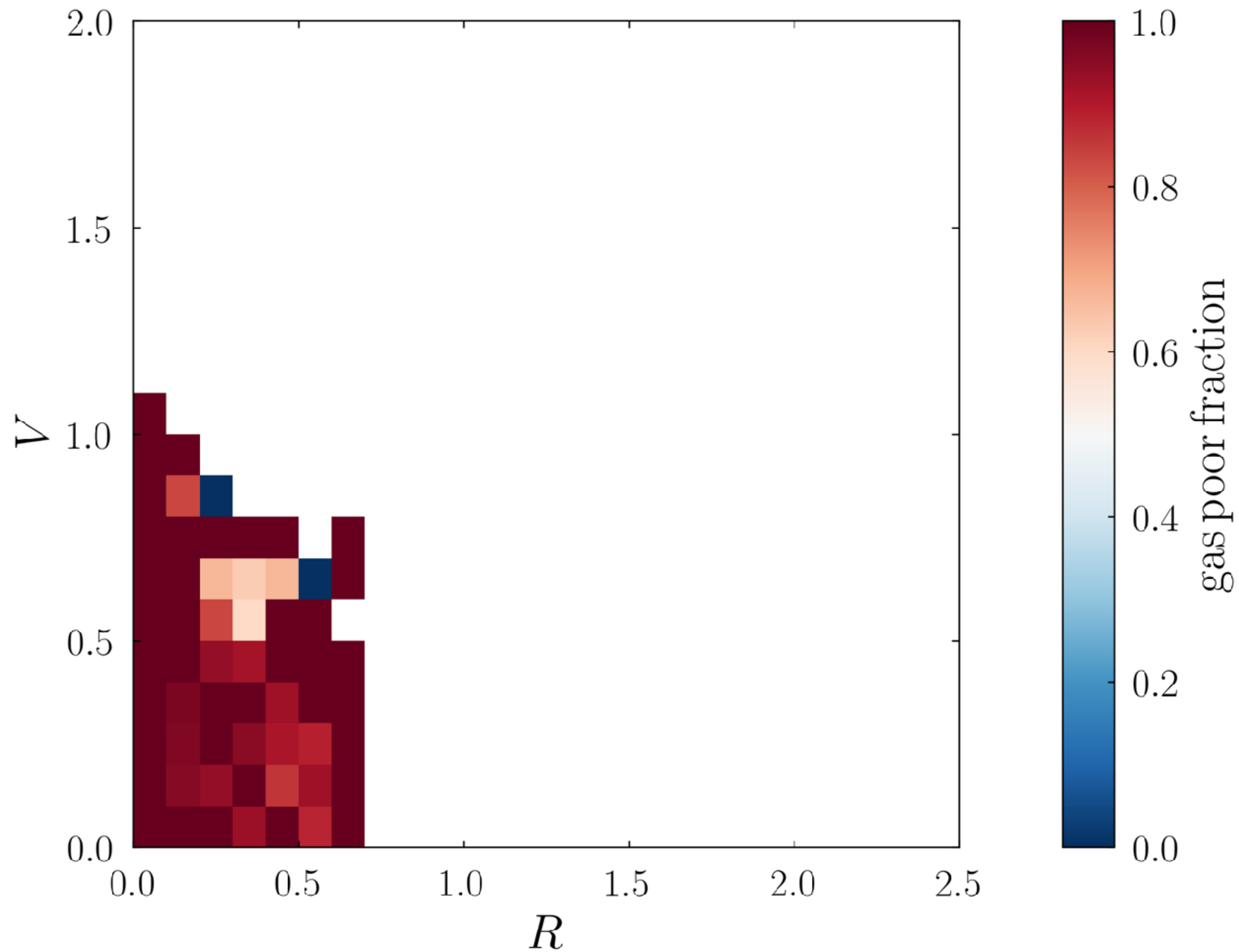
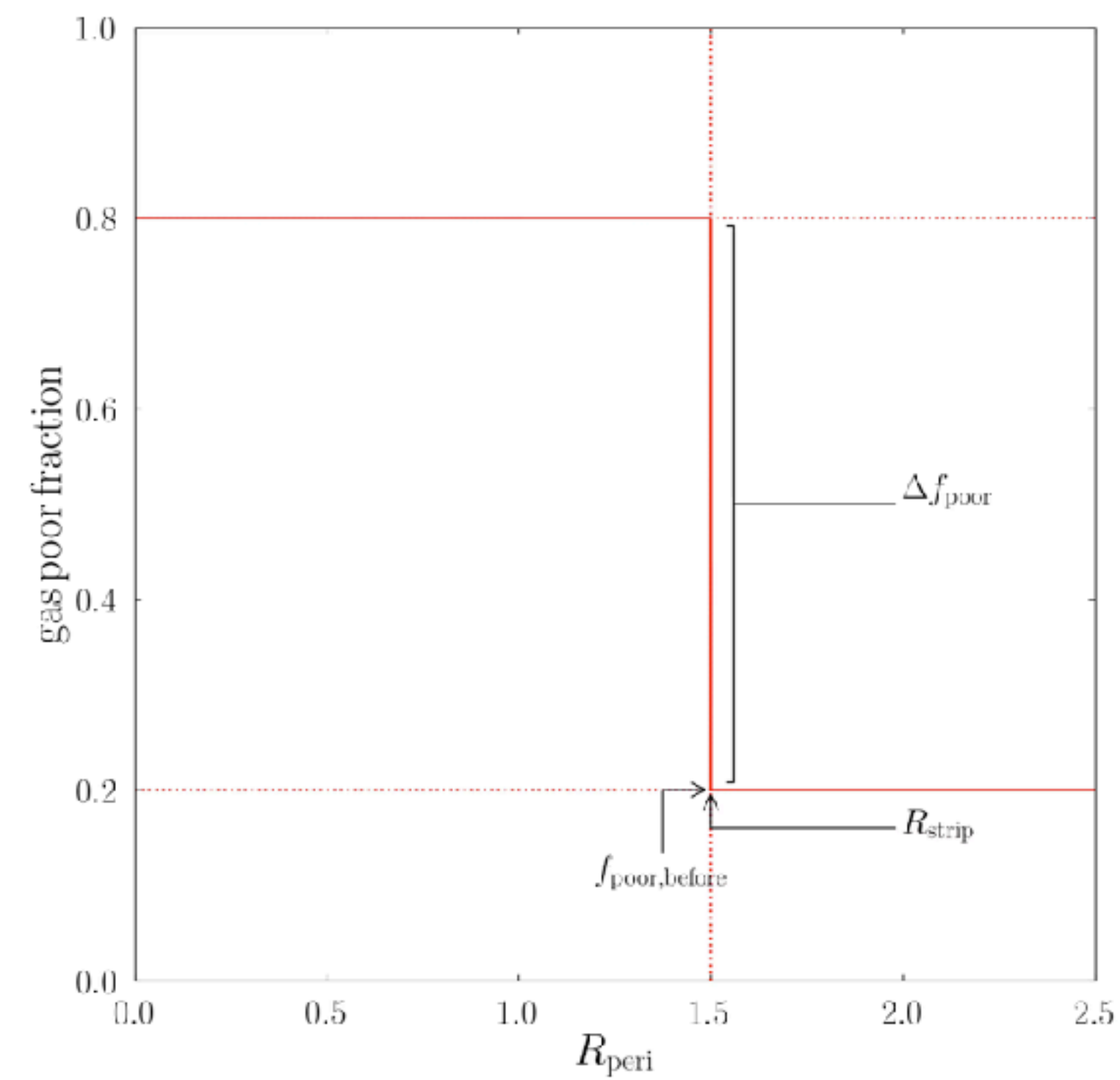
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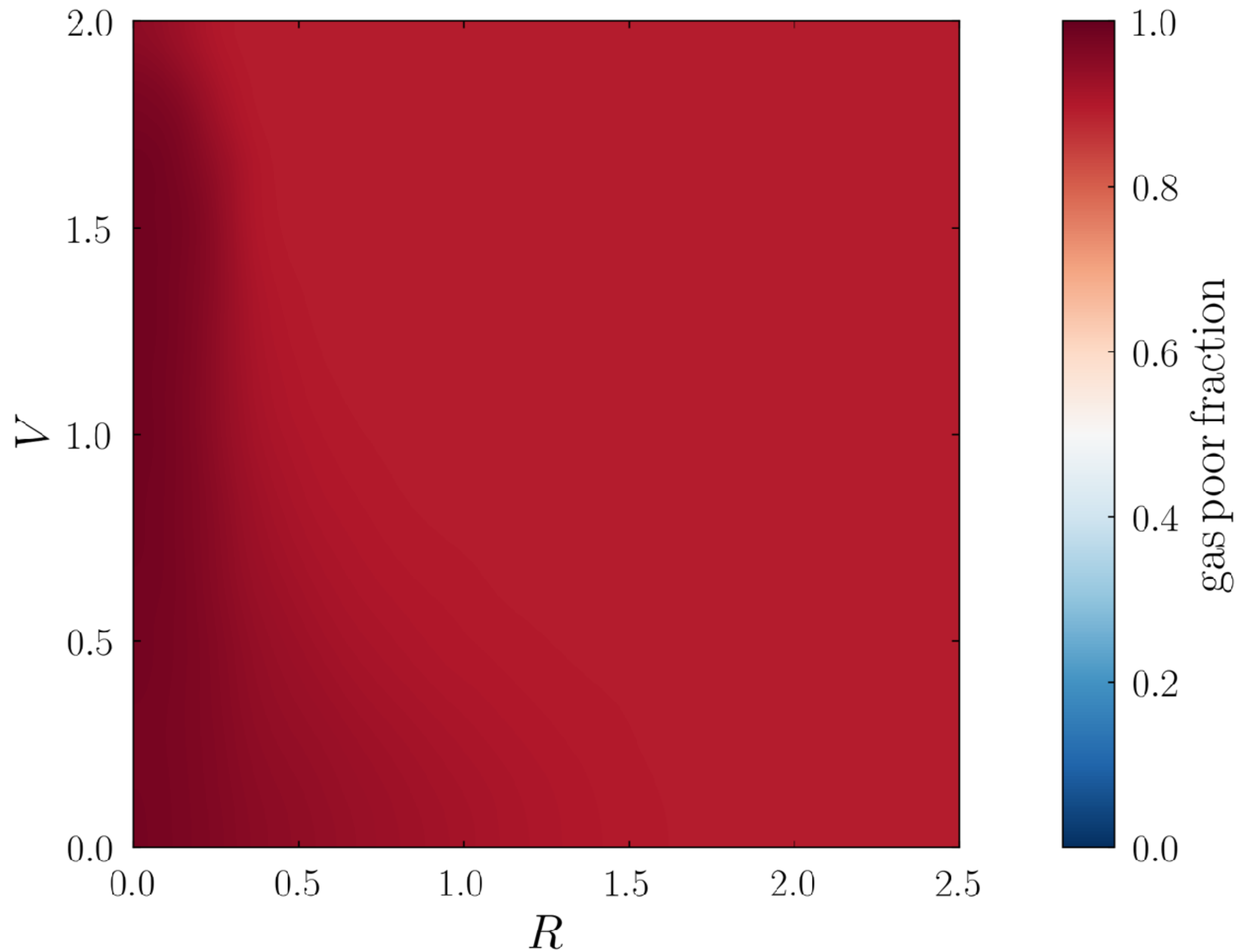
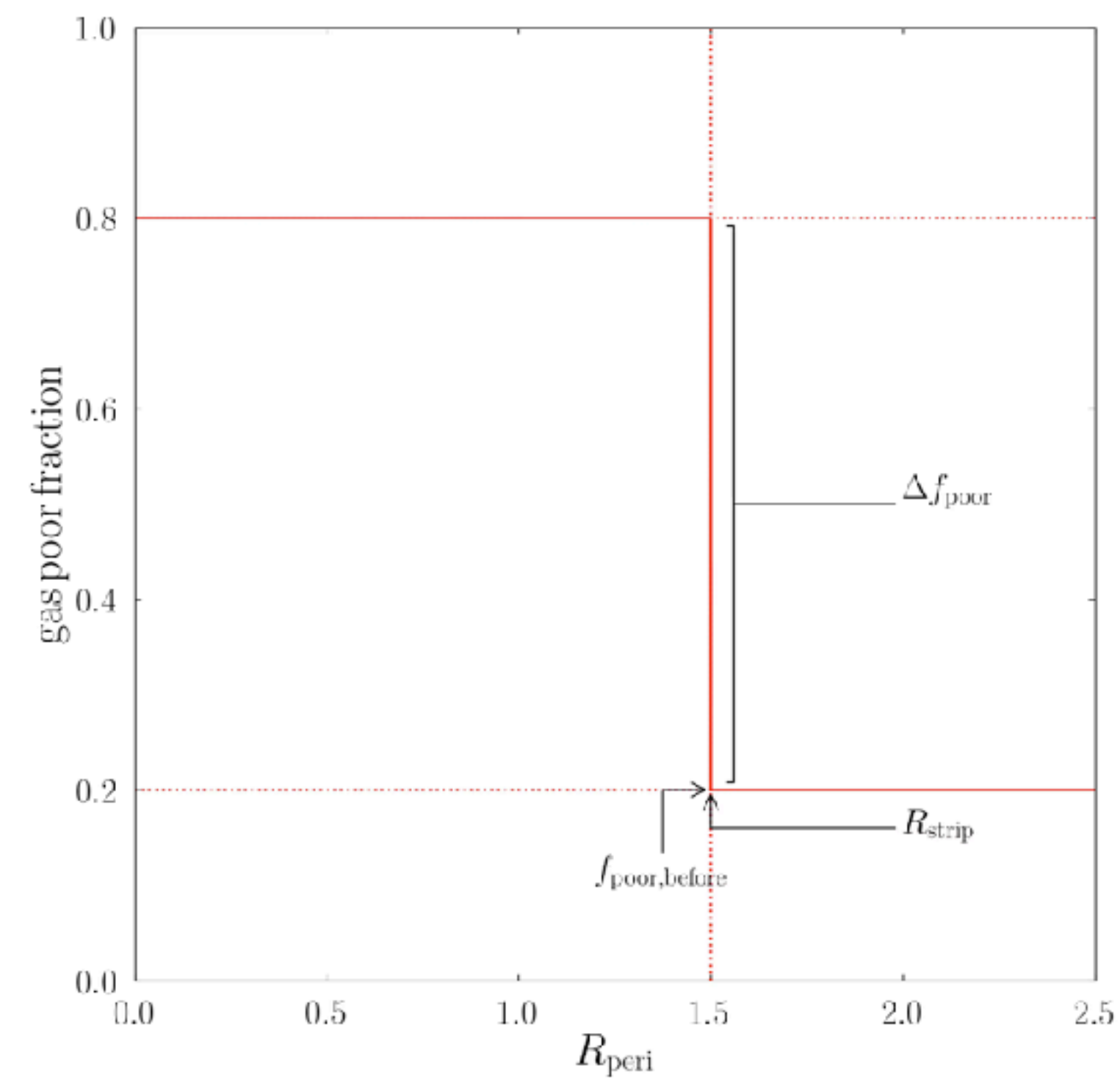
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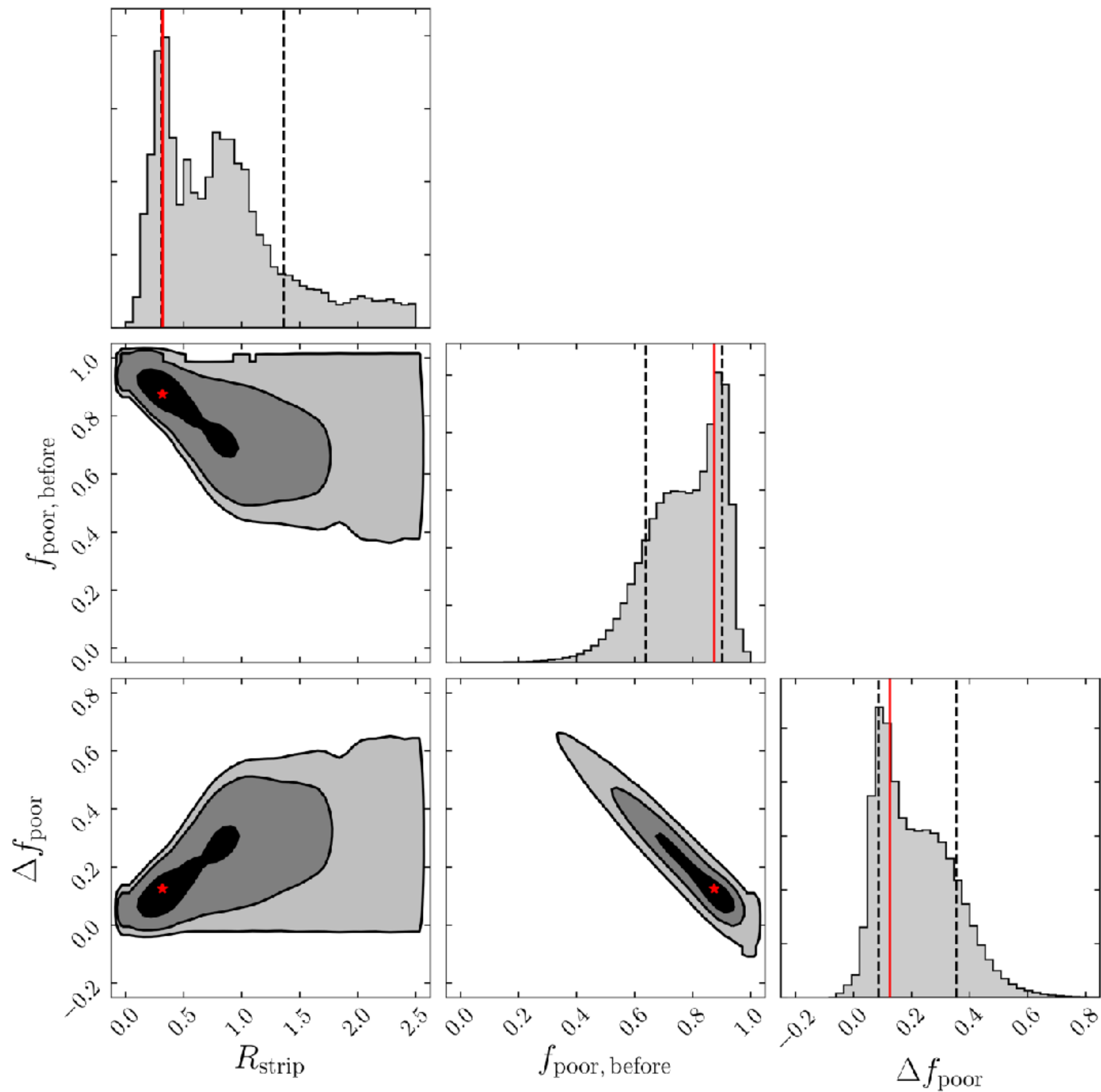
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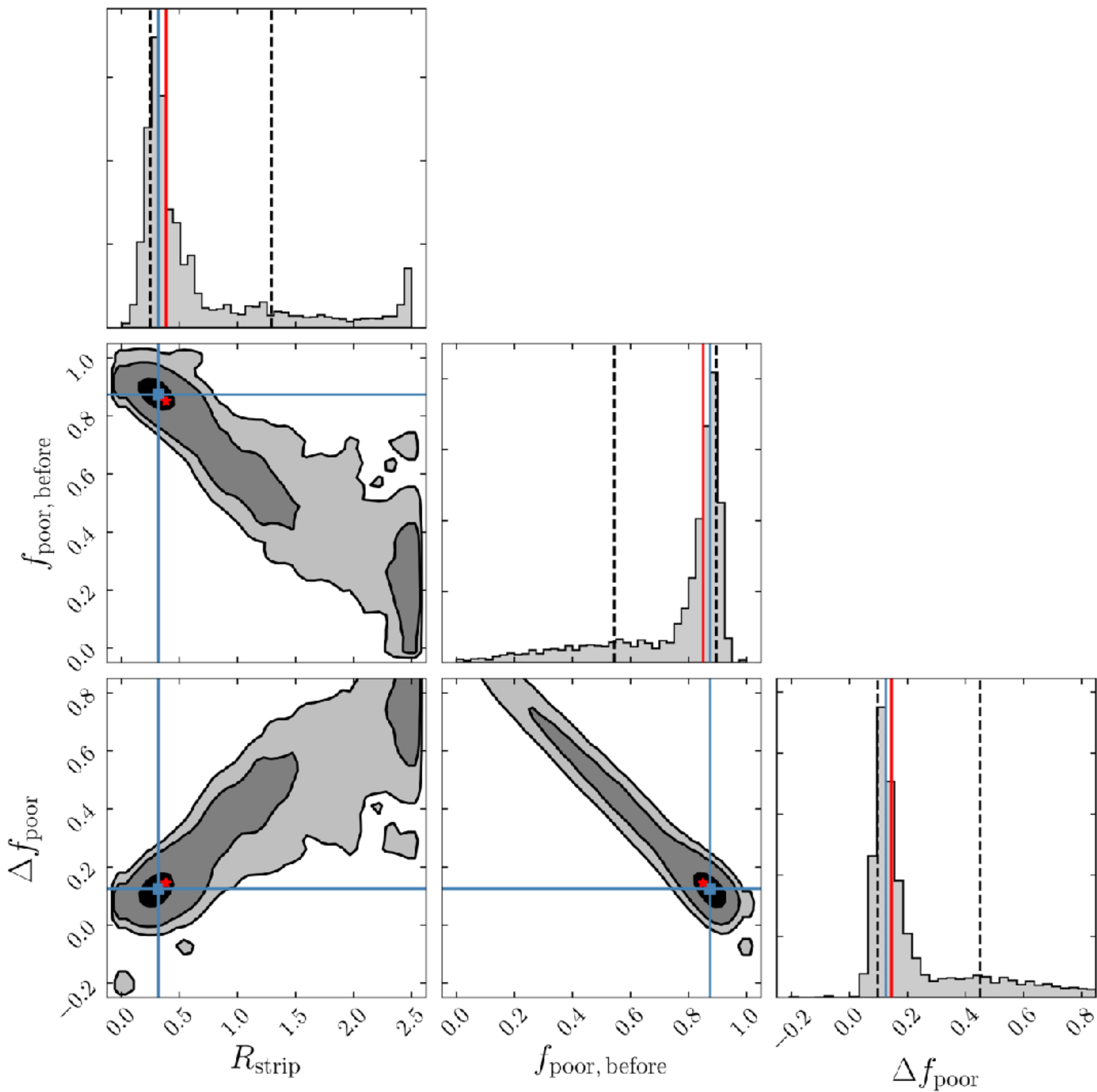
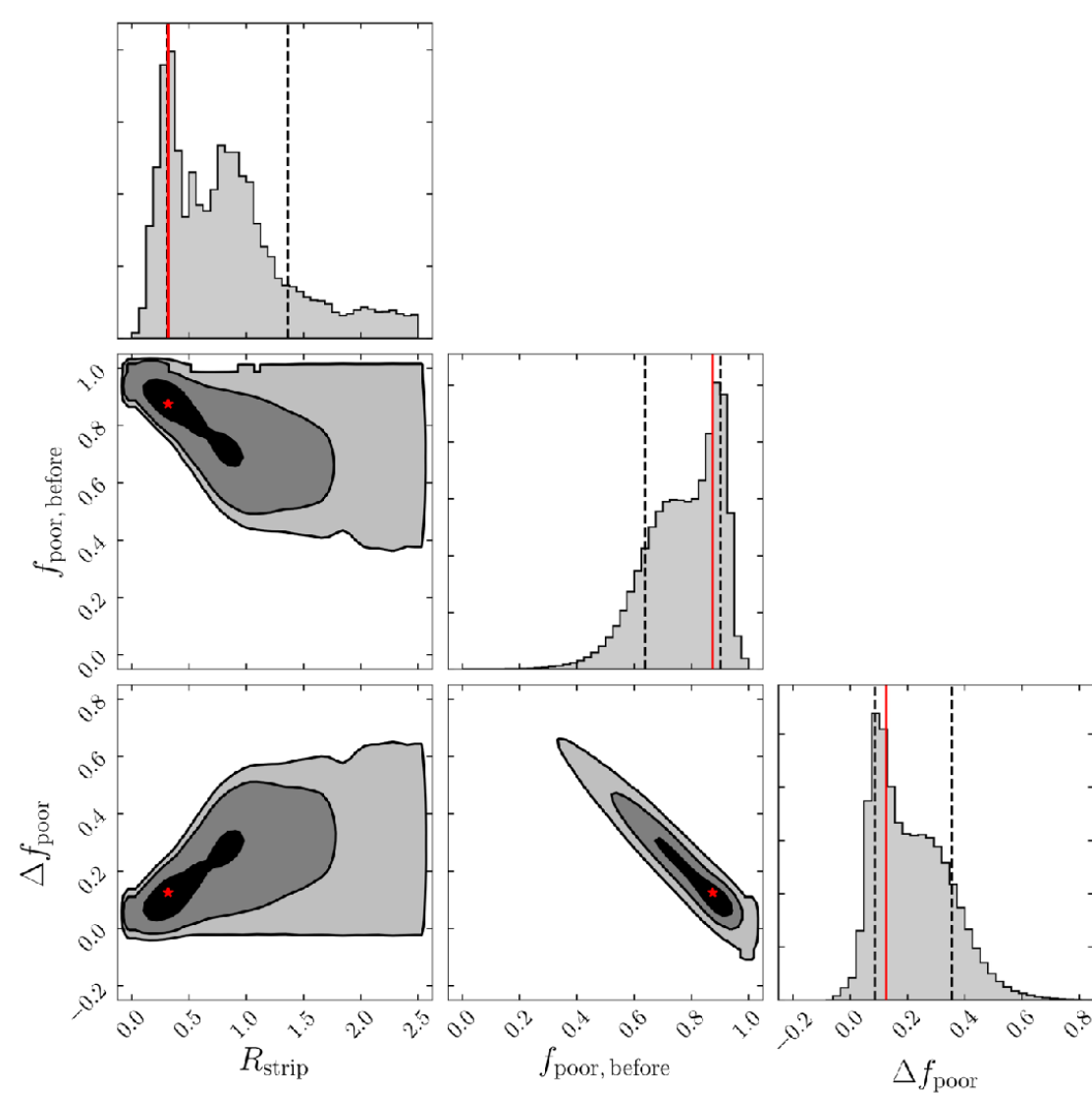
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Summary

- Observed galaxy properties and “orbital libraries” from simulations de-convolved to infer model parameters.
- Initial application to toy model for HI stripping in Coma cluster is promising; meaningful constraints of physical parameters possible.
- See also Oman, Hudson & Behroozi (2013); Oman & Hudson (2016) for application to quenching in SDSS clusters.

Ask about



MARTINI
Mock APERTIF-like Radio Telescope
Interferometry of the Neutral ISM

at coffee.

