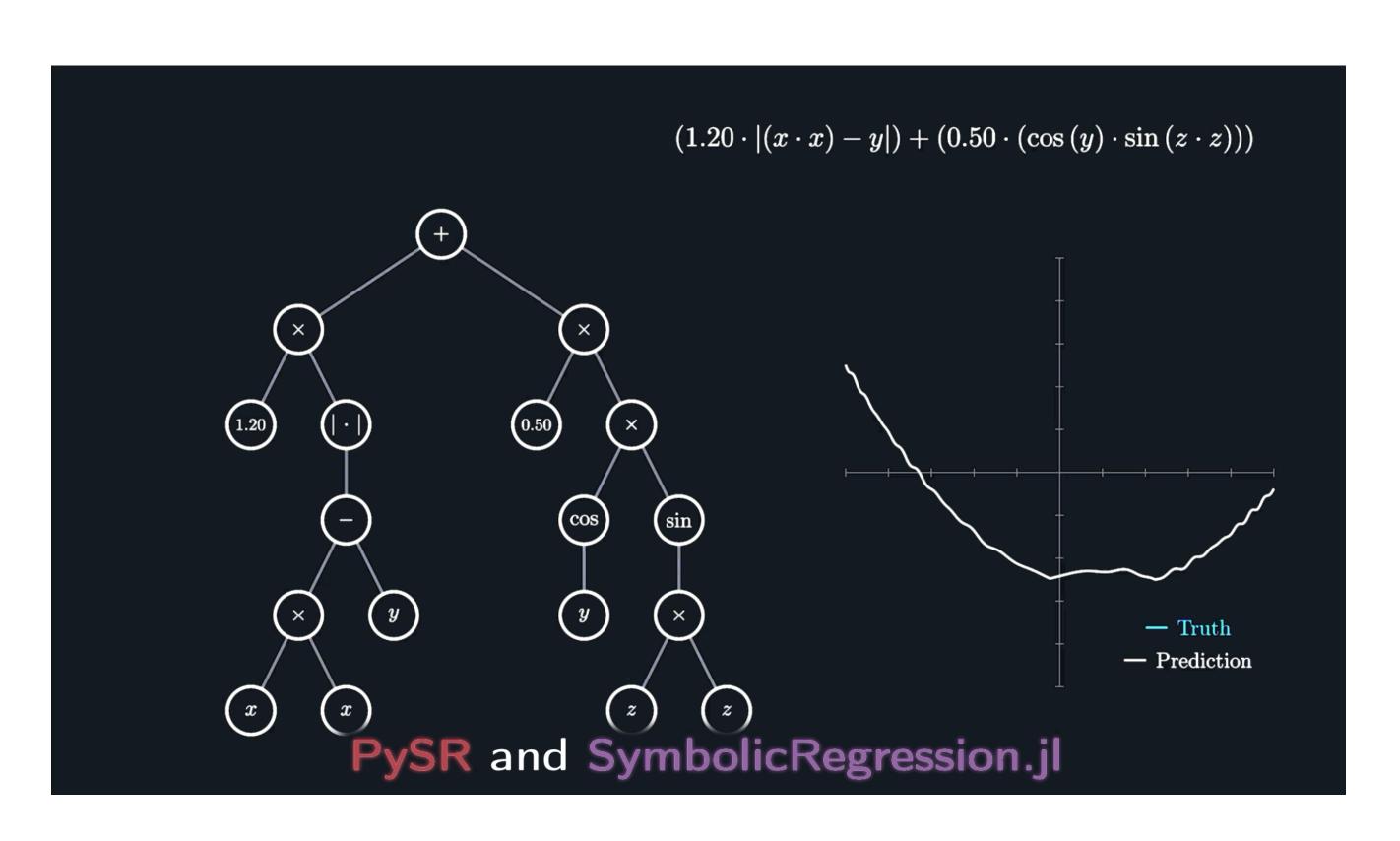
Using Symbolic Regression to Analyse Plasma Data

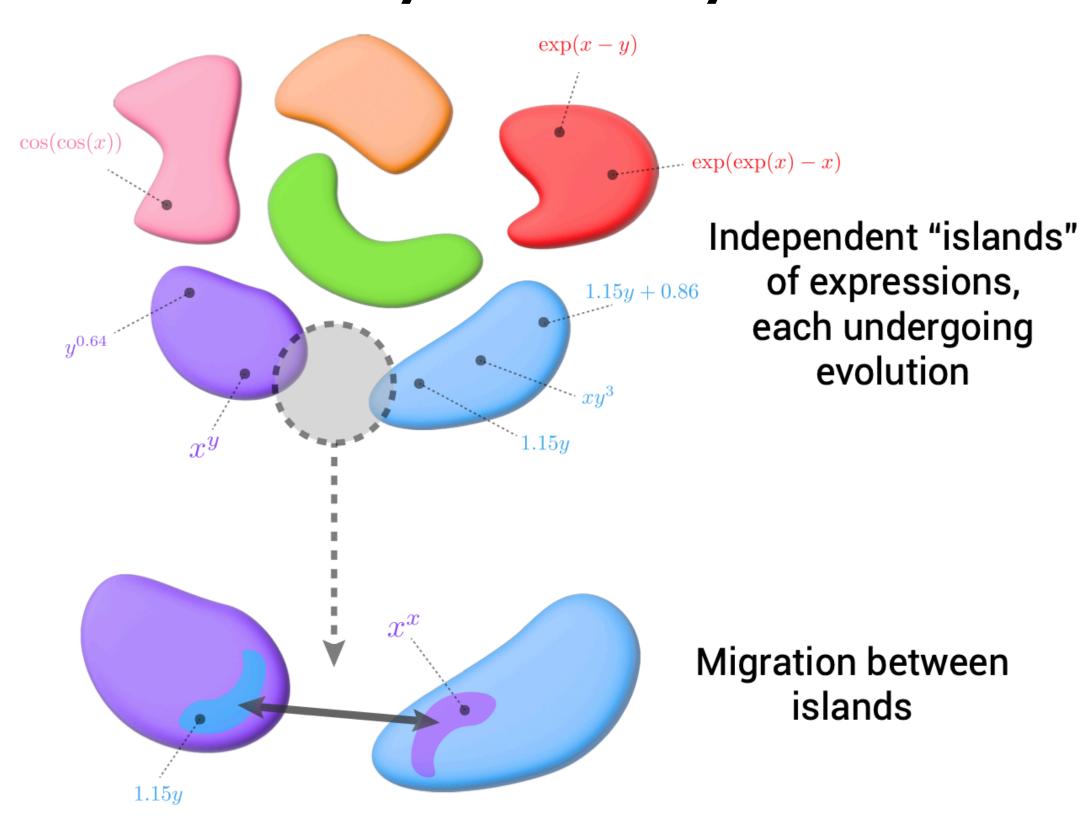
Estêvão Gomes (D. Carvalho, L. O. Silva)



How PySR works:



Analysis with PySR:



^[1] M. Cranmer, arXiv preprint arXiv:2305.01582 (2023)

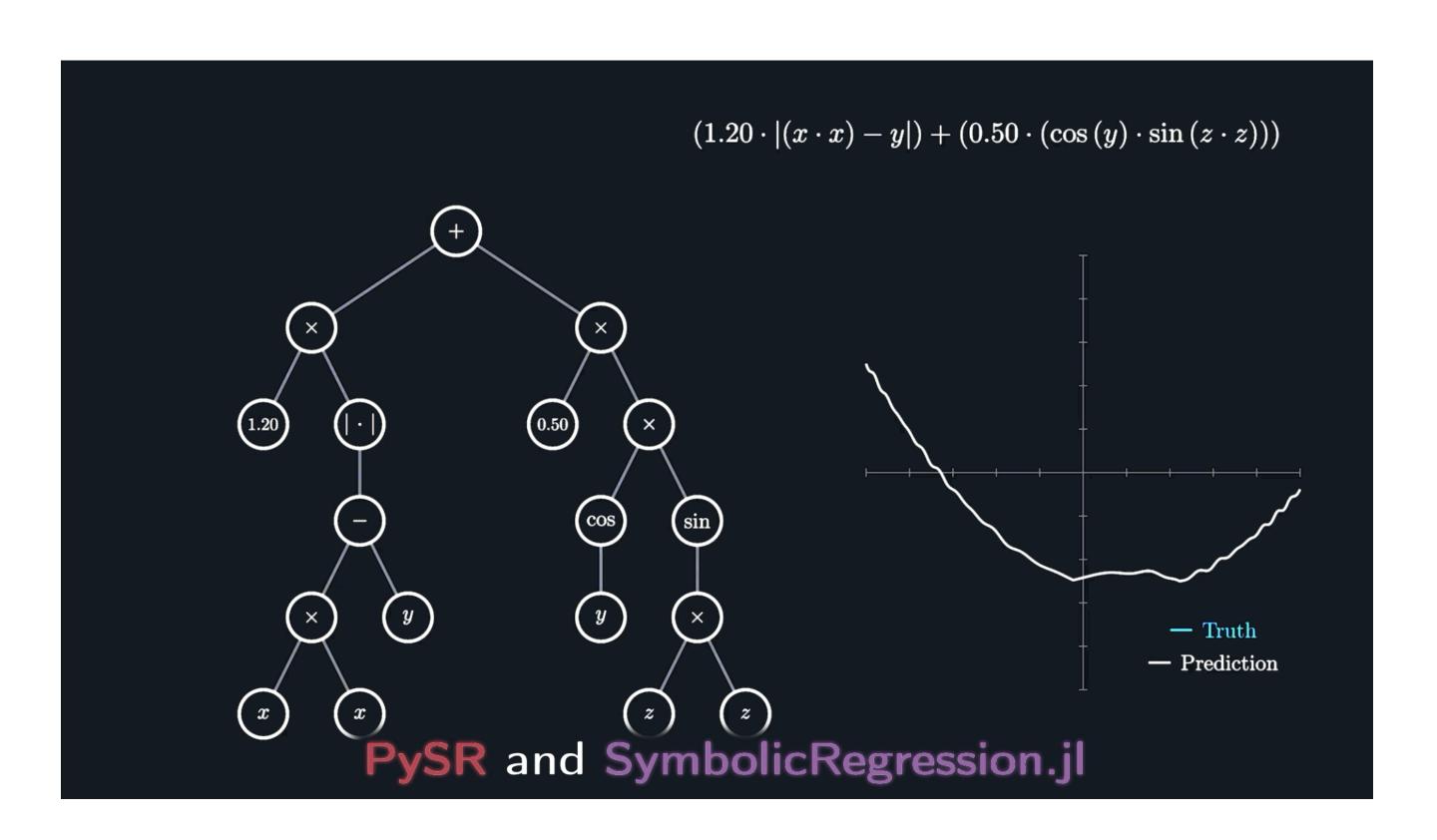
^[2] E. P. Alves and F. Fiuza, Phys. Rev. Research 4, 033192 (2022)

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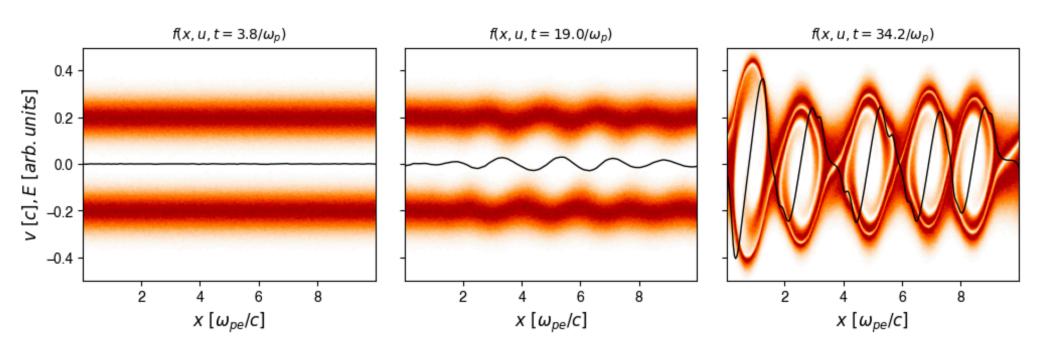
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PySR [1] can be useful to fit complex expressions we know nothing about to simulated data:

$$\partial_t f = -v \partial_x f + \frac{e}{m_e} E \partial_v f$$



Simulated Two-Stream Instability [2]

Computationally slower but supports less knowledge about the fit. Better for uninformed analysis.

^[1] M. Cranmer, arXiv preprint arXiv:2305.01582 (2023)

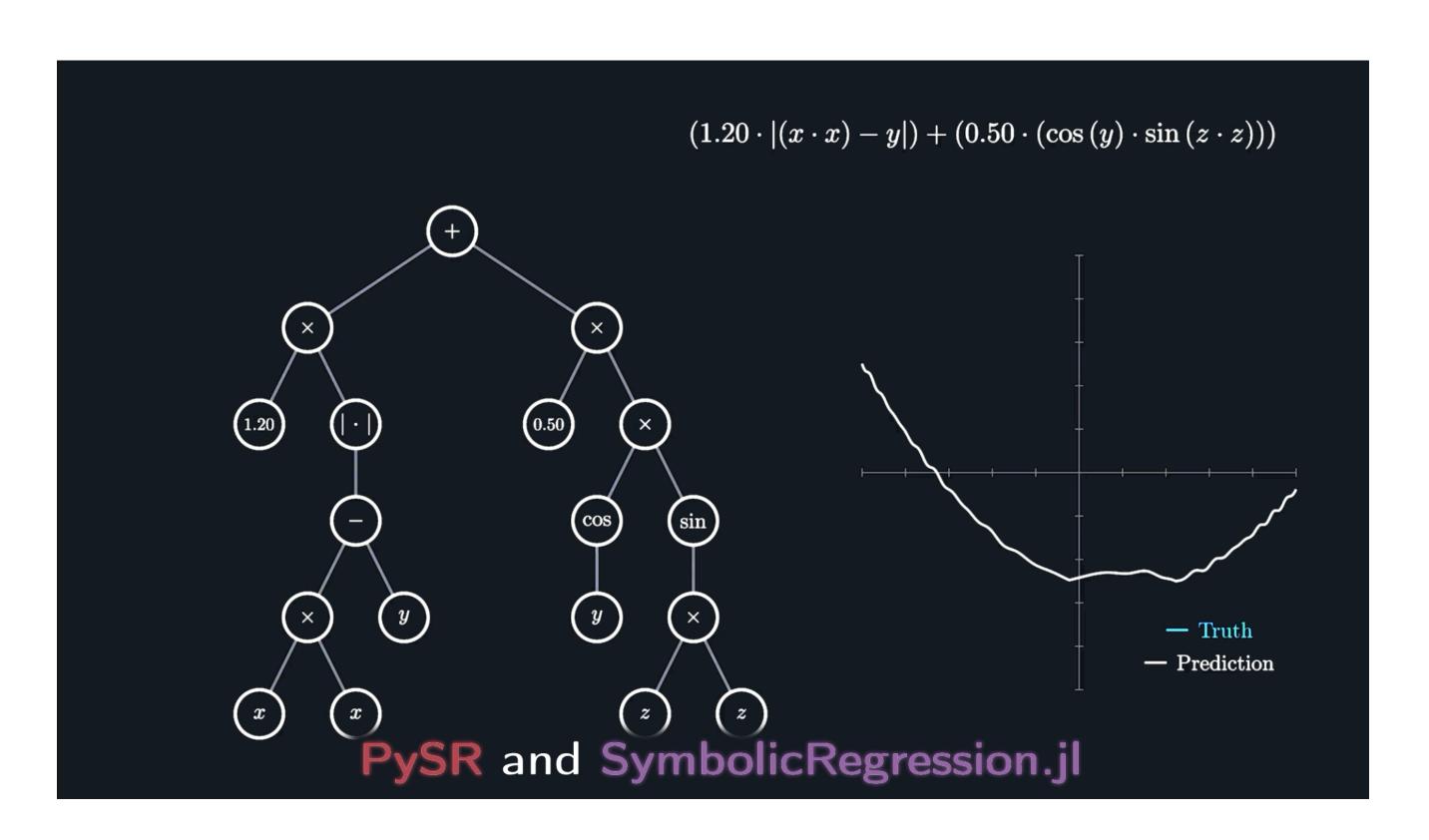
^[2] E. P. Alves and F. Fiuza, Phys. Rev. Research 4, 033192 (2022)

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| 50 | 100 | 150 | 200 |
|------|------|------|-------|
| 3/10 | 4/10 | 8/10 | 10/10 |

N° right equations per n° of iterations

Computationally slower but supports less knowledge about the fit. Better for uninformed analysis.

^[1] M. Cranmer, arXiv preprint arXiv:2305.01582 (2023)

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