Evolution of Cosmic Voids in the Schrödinger-Poisson Formalism

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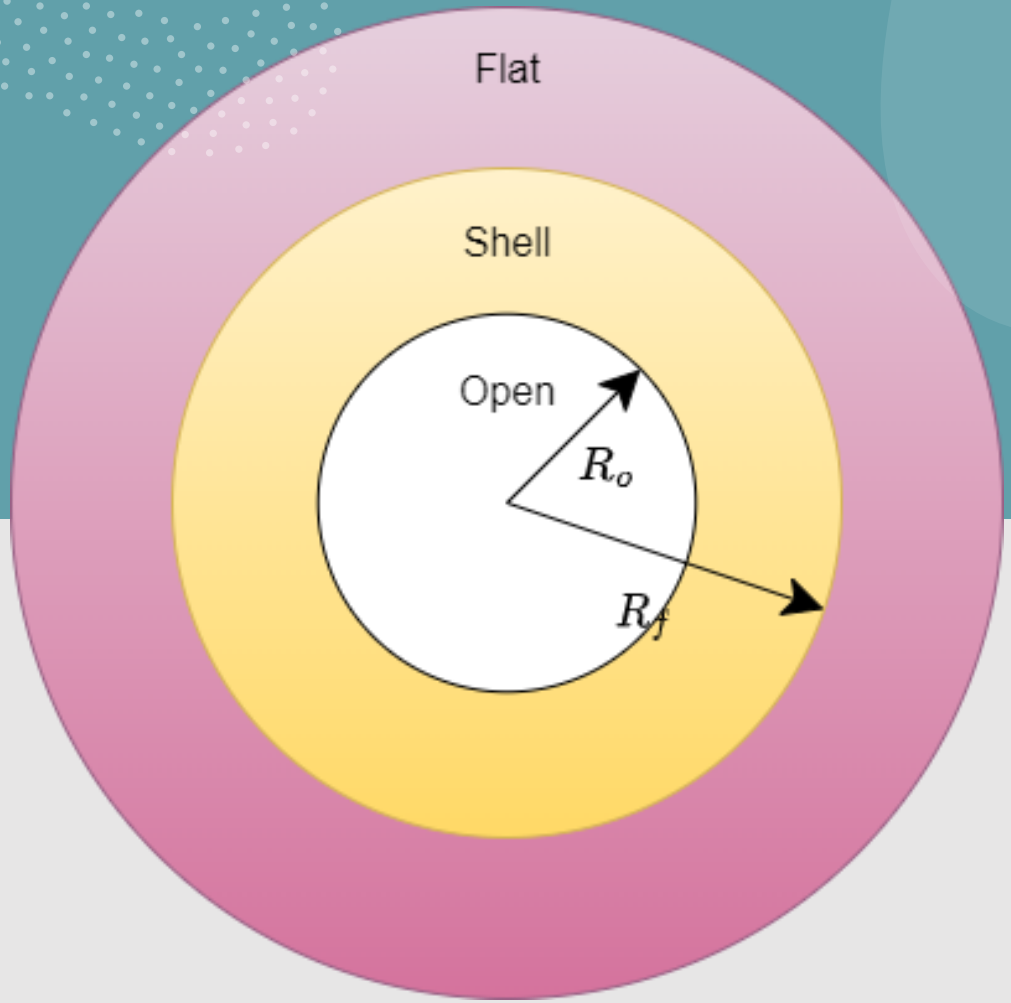
Schrödinger-Poisson System

- Applications in fuzzy dark matter
- Much quicker and simpler to compute

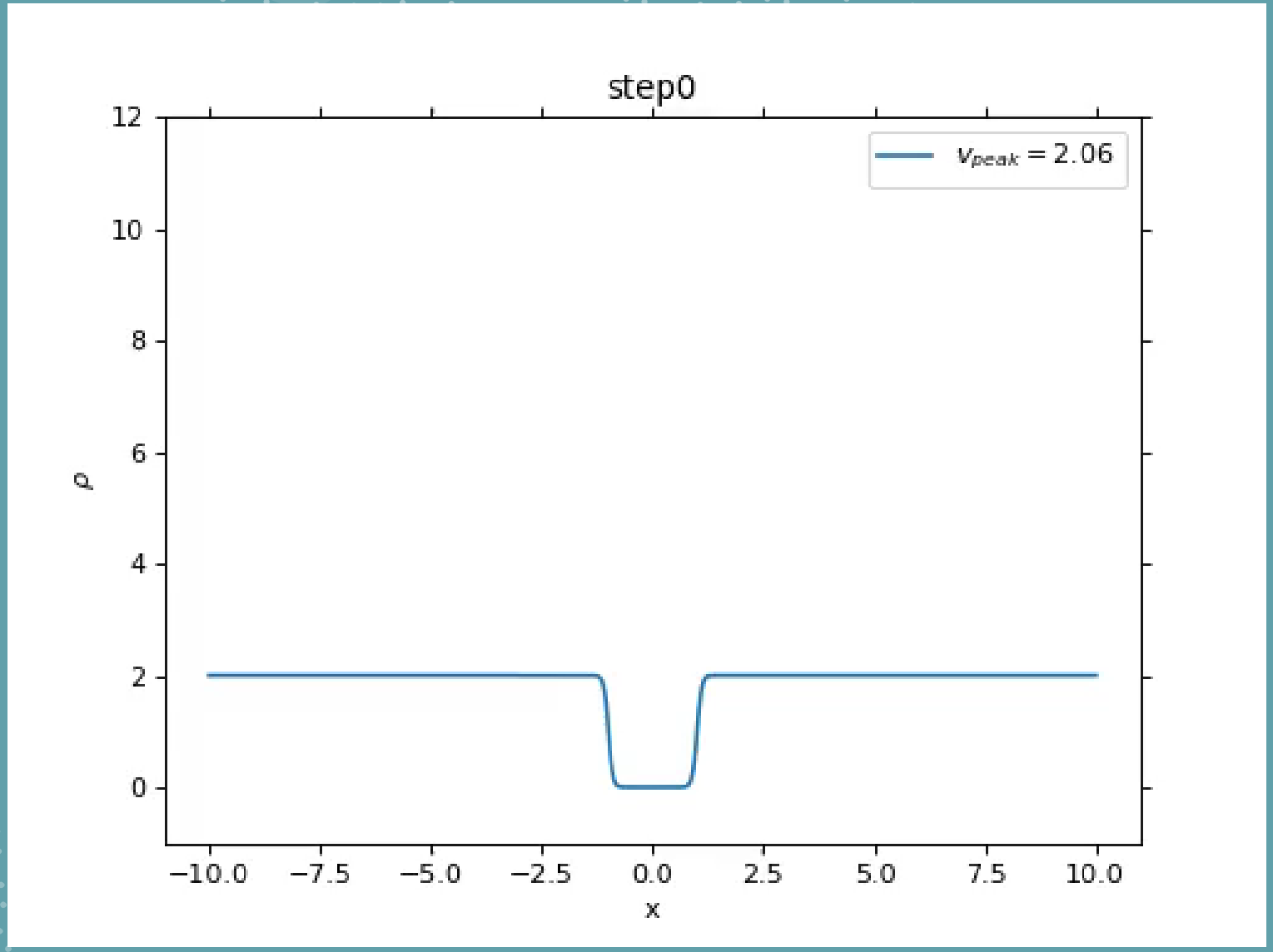
$$\rho = \psi\psi^* = \alpha^2$$
$$\psi = \alpha e^{i\phi/\nu}$$
$$P = \frac{\nu^2}{2}\frac{\nabla^2\alpha}{\alpha}$$

$$i\nu\frac{\partial\psi}{\partial t} = -\frac{\nu^2}{2}\nabla^2\psi + V\psi + P\psi$$
$$\nabla^2 V = 4\pi G|\psi|^2$$

Modelling Voids



Void Evolution



What’s next?

- Getting a SP type system starting from Navier-Stokes
- Entropy of a Schrödinger fluid
- Using Schrödinger- Poisson for Reconstruction

Back-up slide