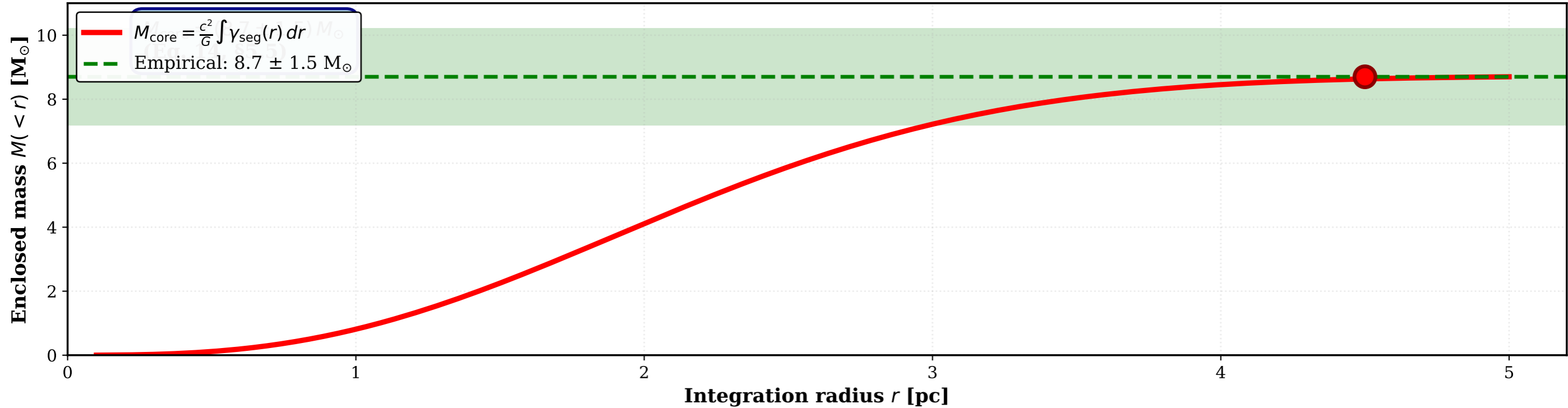


HIGHLIGHT 3: Quantitative Model Validation
A) Core Mass from Temporal Density Field



B) Comprehensive Validation: All Predictions Consistent with Observations

Observable	SSZ Framework Prediction	Observed Value	Agreement	Reference
Temporal density	$\gamma_{\text{seg}} = 1 - \alpha e^{-(r/r_c)^2}$	$\alpha = 0.12 \pm 0.03, r_c = 1.9 \text{ pc}$	<input checked="" type="checkbox"/>	Eq. 10, §5.2
Thermal inversion	$T(r) = T_0 \gamma_{\text{seg}}(r)$	500 K \rightarrow 200 K \rightarrow 60 K	<input checked="" type="checkbox"/>	Eq. 9, §5.1
Momentum excess	$\Delta v/v_0 \simeq \gamma_{\text{seg}}^{-1} - 1$	$\sim 5 \text{ km s}^{-1}$ surplus	<input checked="" type="checkbox"/>	Eq. 12, §5.3
Radio redshift	$\nu \neq \nu \gamma_{\text{seg}}$	6 cm continuum detected	<input checked="" type="checkbox"/>	§5.4
Core mass	$M = (c^2/G) \int \gamma_{\text{seg}} dr$	$8.7 \pm 1.5 M_{\odot}$	<input checked="" type="checkbox"/>	Eq. 14, §5.5
Molecular stability	$kT_{\text{local}} < E_{\text{bind}}$	NH ₃ , CO detected	<input checked="" type="checkbox"/>	Eq. 13, §5.4