Analytics Mohammad MF

Onofrio Mazzarisi

April 27, 2021

From the first two equations of Eqs.(5) in Mohammad draft we obtain at stationarity

$$c_\pi = (\rho_\pi \rho_p)^{1/3}, \tag{1}$$

and

$$c_p = \rho_\pi^{2/3} \rho_p^{-1/3}. \tag{2}$$

At stationarity, and assuming $c_\pi \geq c_p$, the last equations reads

$$\frac{\gamma \rho_p c_\pi}{c_p} = c_\pi + \eta. \tag{3}$$

Plugging in the expression for c_π and c_p and solving for ρ_π we get

$$\rho_\pi = \frac{1}{2}\sqrt{\frac{\eta^6 + 9\gamma^2\eta^2\rho_p^4 + 4\gamma^3\rho_p^6 + 6\gamma\eta^4\rho_p^2}{\rho_p^2}} + \frac{-\eta^3 - 3\gamma\eta\rho_p^2}{2\rho_p}, \tag{4}$$

which at leading order behaves like $\rho_\pi \sim \rho_p^2$.