

# Skeleton field for 2 black holes I

3-metric

$$\gamma_{ij} = \Psi^4 \delta_{ij} \quad \text{with} \quad \Psi = 1 + \frac{G}{2c^2} \left( \frac{\alpha_1}{r_1} + \frac{\alpha_2}{r_2} \right)$$

Lapse function

flesh-term truncation + projection of the lapse equation on  $\delta_B$

$$\chi_B = 1 - \frac{Gm_A}{r_{12}c^2} \Psi_A^{-4} \chi_A \left\{ \frac{7p_{Ai}(V_{ix=x_A})}{m_A c} + \left[ 1 + \frac{p_{Ai}p_{Ai}}{m_A^2 c^2 \Psi_A^4} \right]^{-1/2} \left[ 3\Psi_A^2 \frac{p_{Ai}p_{Ai}}{m_A^2 c^2} + \Psi_A^6 \right] \right\}$$

$$\text{where } \chi_1 = 1 - \frac{G\beta_2}{2r_{12}c^2}$$

$$\Rightarrow \text{lapse given by } N = \frac{\chi}{\Psi} \quad \text{with} \quad \chi = 1 + \frac{G}{2c^2} \left( \frac{\beta_1}{r_1} + \frac{\beta_2}{r_2} \right)$$