

$$H_{\text{ambiguous}}^{3PN} = \omega_{\text{static}}(m_1 + m_2) \frac{G^4 m_1^2 m_2^2}{c^6 r_{12}^4} = \omega_{\text{static}} \frac{G^4 M^3 \mu^2}{c^6 r_{12}^4}$$

$$\omega_{\text{static}} = 0 \quad \text{BL}, \quad \omega_{\text{static}} = -\frac{1}{8} \quad \text{ML} \quad (\text{shift of positions})$$

$$H_{\text{induced}}^{3PN} = -\omega_{\text{static}} (\mathbf{p}^2 - 3(\mathbf{n} \cdot \mathbf{p})^2) \frac{G^3 M^2}{c^6 r_{12}^3} \quad \text{relative to BL}$$

Thus, coordinate (gauge) transformation (given in CMS):

$$\delta H = \omega_{\text{static}} (\mathbf{p}^2 - 3(\mathbf{n} \cdot \mathbf{p})^2) \frac{G^3 M^2}{c^6 r_{12}^3} - \omega_{\text{static}} \frac{G^4 M^3 \mu^2}{c^6 r_{12}^4}$$