

$$J_{\ell mn}(r) = \frac{2q \hat{c}_{\ell m} P_{\ell}^m(0)}{T_r r |u^r(r)| f(r)^2} \cos[\omega_{mn} t_p(r) - m \varphi_p(r)] \\ \times \Theta[r - r_{\min}] \times \Theta[r_{\max} - r]$$