

$$I(\Omega, \Phi) = 2\kappa \sum_k \left\{ (1 - P_\gamma) \left| \sum_{\ell, m} [\ell]_{m; k}^{(-)} \Re[Z_\ell^m(\Omega, \Phi)] \right|^2 + (1 - P_\gamma) \left| \sum_{\ell, m} [\ell]_{m; k}^{(+)} \Im[Z_\ell^m(\Omega, \Phi)] \right|^2 + \right.$$