

ABSTRACT

We have used the random phase model for the electronic wave-functions to calculate the imaginary part of the dielectric function $\epsilon_2(\omega)$ and the magnitude of the third-order response, $|\chi^3(\omega)|$ using a model structure of a-Si containing 1728 atoms. We show that this simple calculation gives reasonable results for $\epsilon(\omega)$ and furthermore, the behaviour of $\chi^3(\omega)$ is similar to more detailed theoretical calculations.