Fundamentals of Radiation Damage

Number of Vacancy/Interstitial Pairs produced by the ith reaction per incident particle of energy E per second , $N_d^i(E)$

$$N_d^i(E) = N_o \int \varphi(E)\sigma^i(E)K(E,T)\nu(T)dT$$

Where:

N_o = Atomic Density

ϕ (E) = Flux of particles of energy E

σ^i (E) = Probability that the incident particle with energy E, causing reaction i, will undergo an interaction with a matrix atom

K(E,T) = Probability that if an interaction takes place, it will produce a primary knock-on-atom (PKA) with energy T

ν(T) =Number of atoms subsequently displaced by the PKA