0.0.1 The biological process

0.0.2 The simulation domain

We simulate a 3-dimensional domain in accordance with the maximal z-projection performed in experiments. The affect of the UV beam on all layers of the nucleus is considered to be similar.

0.0.3 The polymer model

We use a cross-linked Gaussian chain of N monomers connected by harmonic springs to represent a coarse-grained model of the chromatin. Springs between adjacent monomers are assigned a minimal distance. Cross-linking are added randomly between pairs of monomers, with each cross link being an harmonic spring. The measure of cross-linking in each realization of the polymer is the percentage of non-nearest neighbor monomers connected of the N monomers of the chain.

0.0.4 UV irradiation

The Uv beam is considered to generate random damages

Affect of UV irradiation on the polymer

0.0.5 Polymer Post irradiation

0.0.6 Repair stage