Cancer therapies : The point of view of a theoretical physicist

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Part of the progress in cancer therapies relies on a better understanding of the physical processes into play. In this talk, I will review some of the questions raised by non-invasive cancer therapies from a theoretical perspective. In particular, I will focus on the underlying microscopic mechanisms and the various modelings on the market to address them. I will then briefly present a theoretical framework, based on a combined quantum/classical approach, allowing to study dynamical processes involved in the irradiation of an electronic system of biological interest. I will finally present an example of application in the case of the electronic attachment on a water molecule, and emphasize the difficulty to theoretically address such an apparently simple situation.