

## Treatment of lung cancer with protontherapy

*Z. Chemingui\**<sup>a</sup>, *F. Benrachia*, *H. Ladjalb*, *M. S. Balic*

a) Laboratoire de Physique Mathématique et Subatomique, Mentouri University,  
Constantine1

b) - Athéna Médical Center –Constantine

\* [z.chemingui@hotmail.fr](mailto:z.chemingui@hotmail.fr)

### Abstract

In radiotherapy, lung cancer is associated with local control rates very low. The difficulty of this type of treatment is to irradiate relatively radio-resistant lung lesions very radiosensitive. Thus, the issue of adequate therapeutic doses is often limited by the size of the target volume in order to keep the risk of complications to an acceptable level. Radiotherapy of lung tumors is sully by many uncertainties that must be considerate by the safety margins, implying an increase in the size of the target volume. The challenge is to implement methods to reduce uncertainties, and therefore the size of the target volumes. In addition, the proton therapy may better spare the healthy tissues relative to the X-ray radiotherapy.

It is necessary to carry out the study of the impact of heterogeneity on the position of the Bragg peak and the absorbed dose in the target volume to be able to perform processing in proton therapy. For this we used the simulation in different positions with the Geant4 code to better appreciate the need for this therapy.

**Keywords:** Proton, lung cancer, heterogeneity.