

# **Ionizing sources and radiation barriers**

My research work is about subatomic particles. Thanks to a TimePix detector that has been given to me and four other students of my promotion, I've been able to study different aspects about radiation. The main objectives in this research were study different radiation sources and the different kind of radiation that they can emit as well as the properties and capacities of some radiation barriers.

## **The TimePix detector**



-The TimePix detector that has been used is capable of representing the radiation tracks of the radiation that resort its plate surface

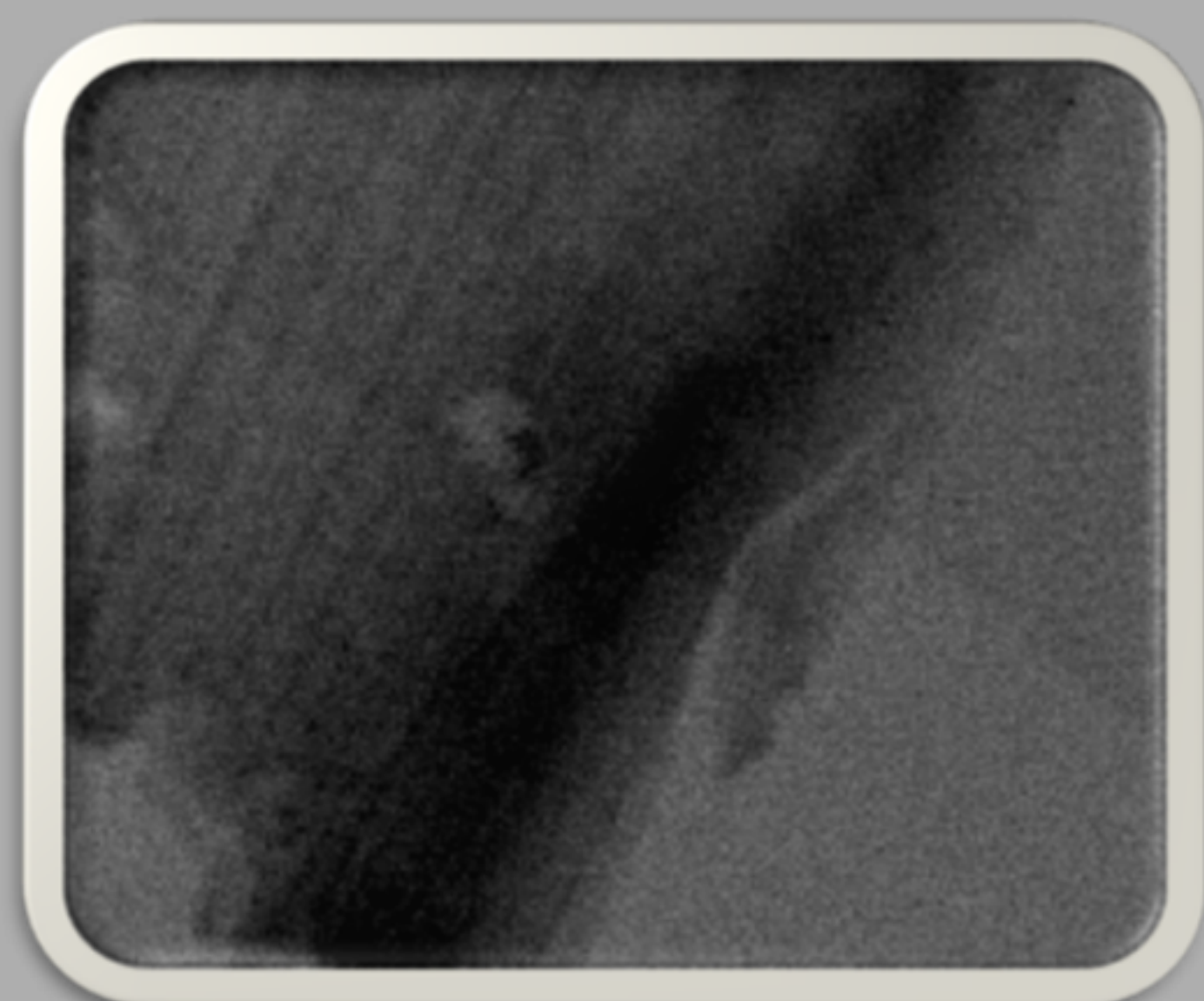
-Using an application, we can configure minimal and maximal radiation that a particle track must have to get represented on screen, so as counting the number of radiation particle that impact and see their energy (works as spectrometer)

## **"Radiography" experiment**

-In the University of Barcelona, I was able to use an X-Ray machine to make a radiography of a little wood trunk.

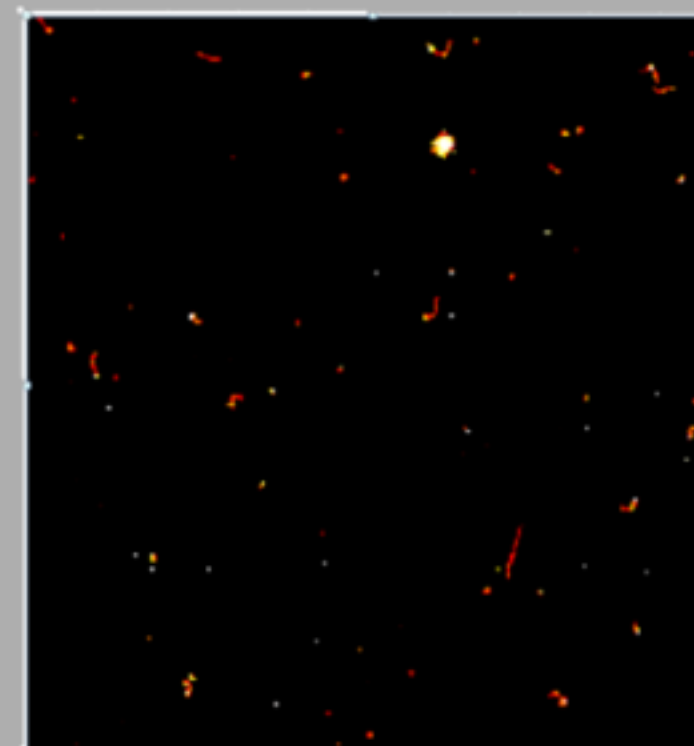
-The method to do it was to put the trunk between a polarized X-Ray source and the TimePix detector.

-As the trunk absorbs part of the X-Ray, the detector caught more or less energy on the beam depending on the part of the trunk.



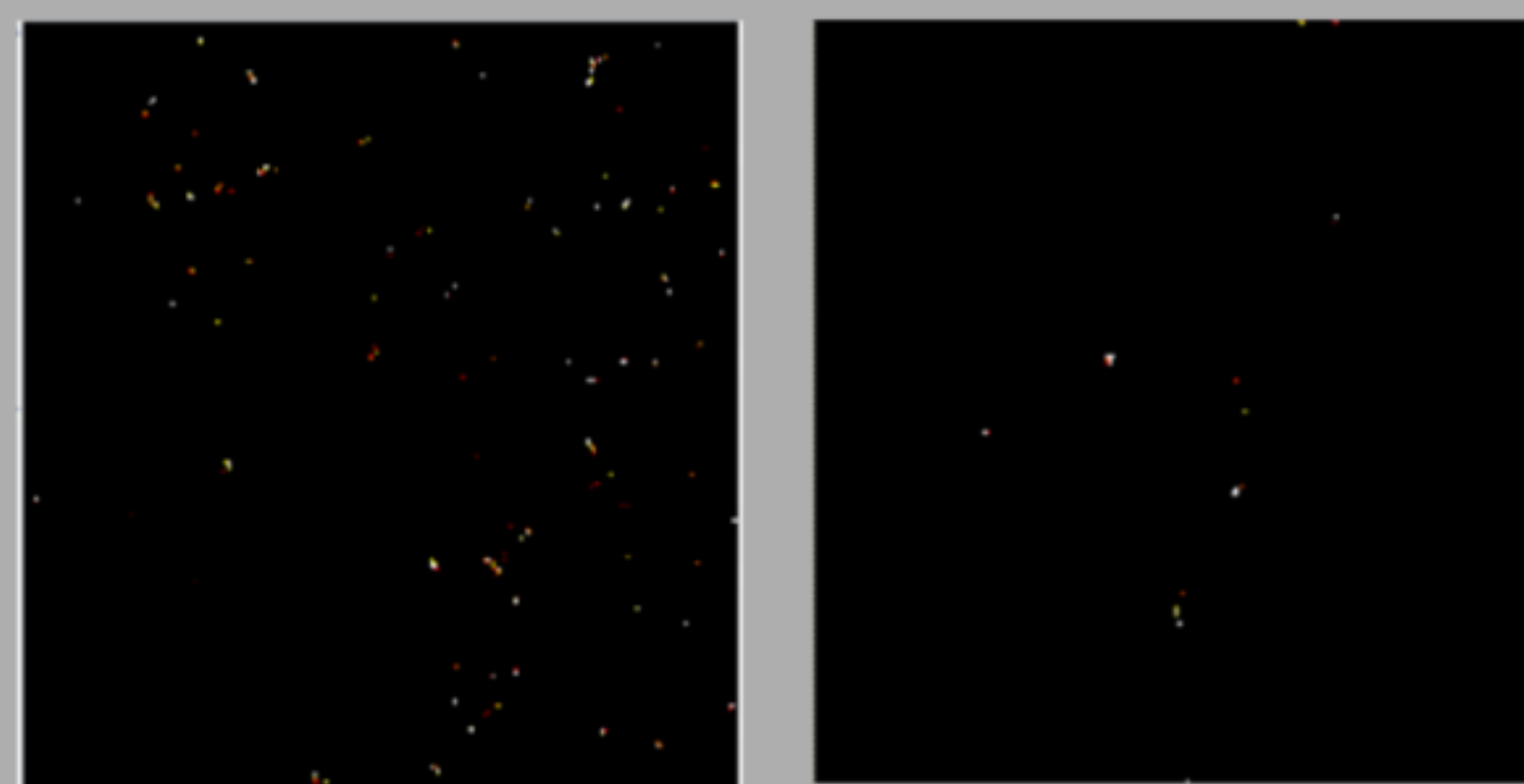
## **Radioactive materials and radiation barriers**

-Using the TimePix detector, I could observe the radiation emitted by several substances so as tungsten, uranium and potassium



*potassium radiation*

- I also could prove the effectiveness against radioactivity of some radiation barriers like foil and porous paper



*radiation blocked by aluminium*

## **References**

KREJCI, FRANTISEK. (2010), Series of Laboratory Exercises in the Physics of the Microworld.

VÍCHA, Vladimír. School experiments for elementary and high schools with jablotron MX-10 particle camera.

MERCADÉ, Joan et al. (2009). Física 2 Batxillerat. (Primera Edició). Madrid: Mc Grau Hill.

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