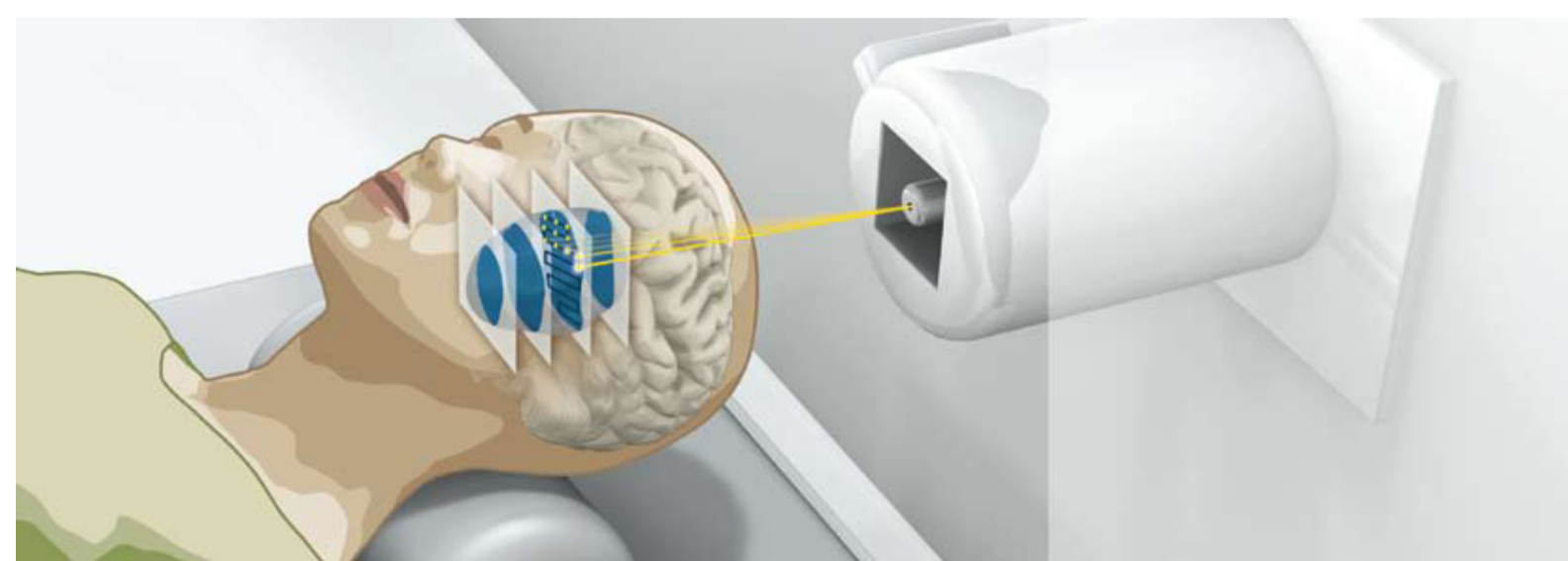# Beam Position Monitors for different particle accelerators*
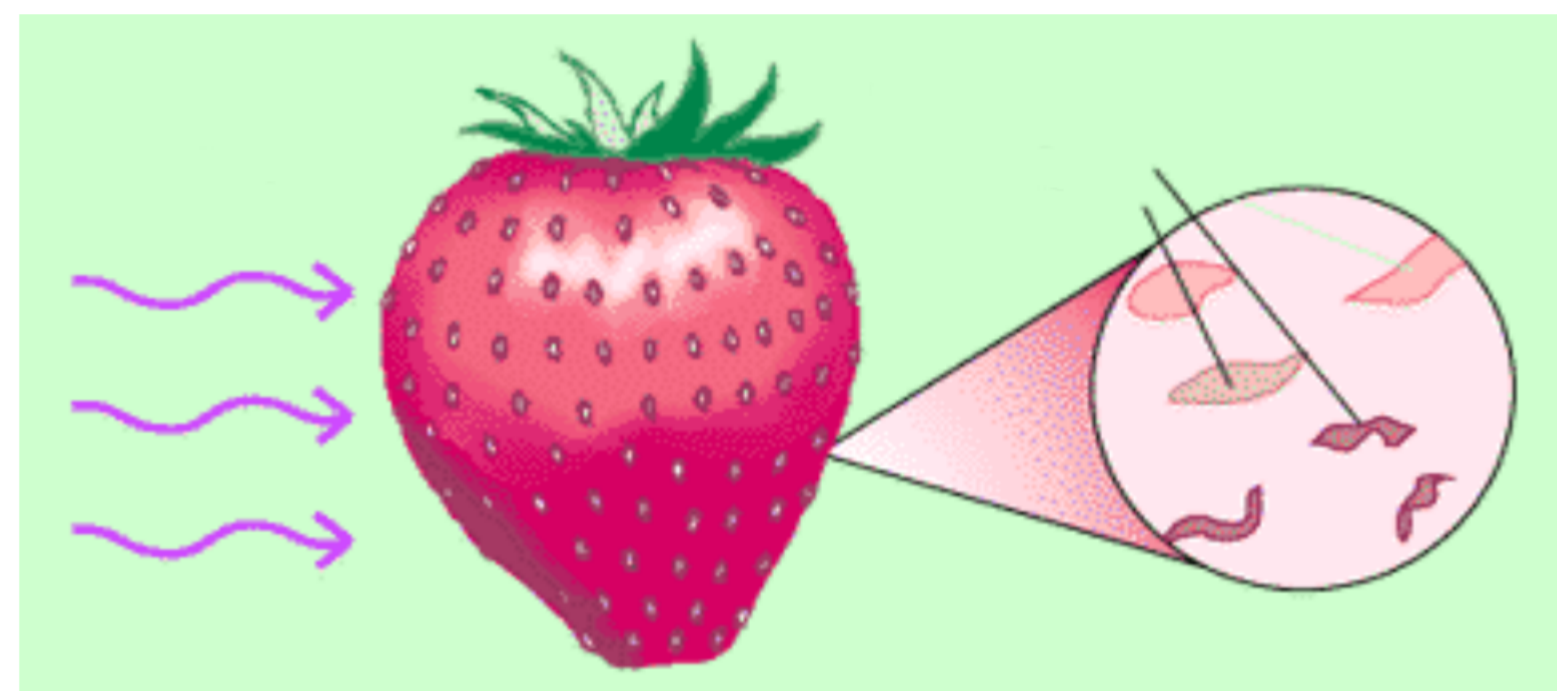
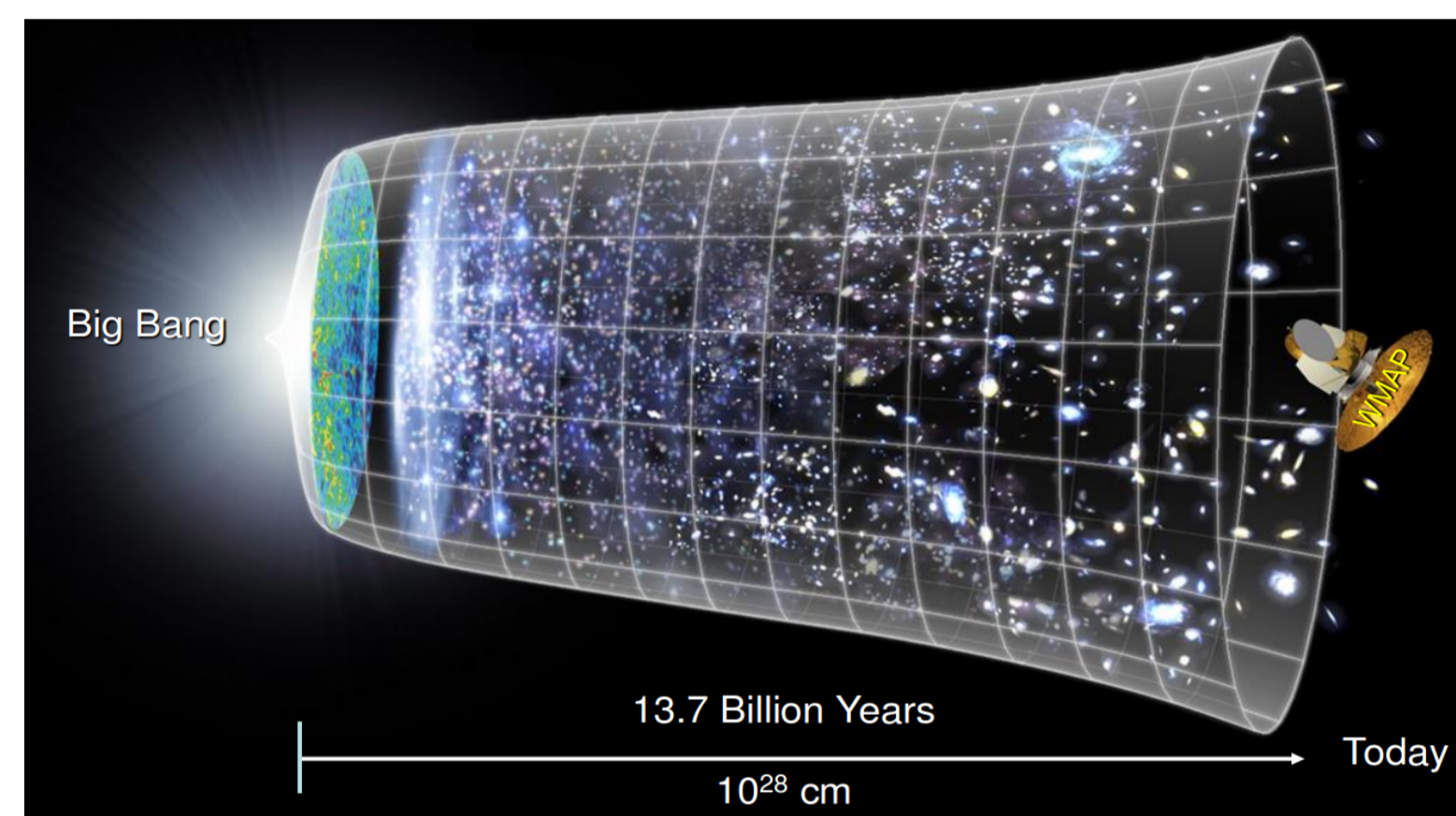*Manuel Cargnelutti, Instrumentation Technologies, Solkan, Slovenia*

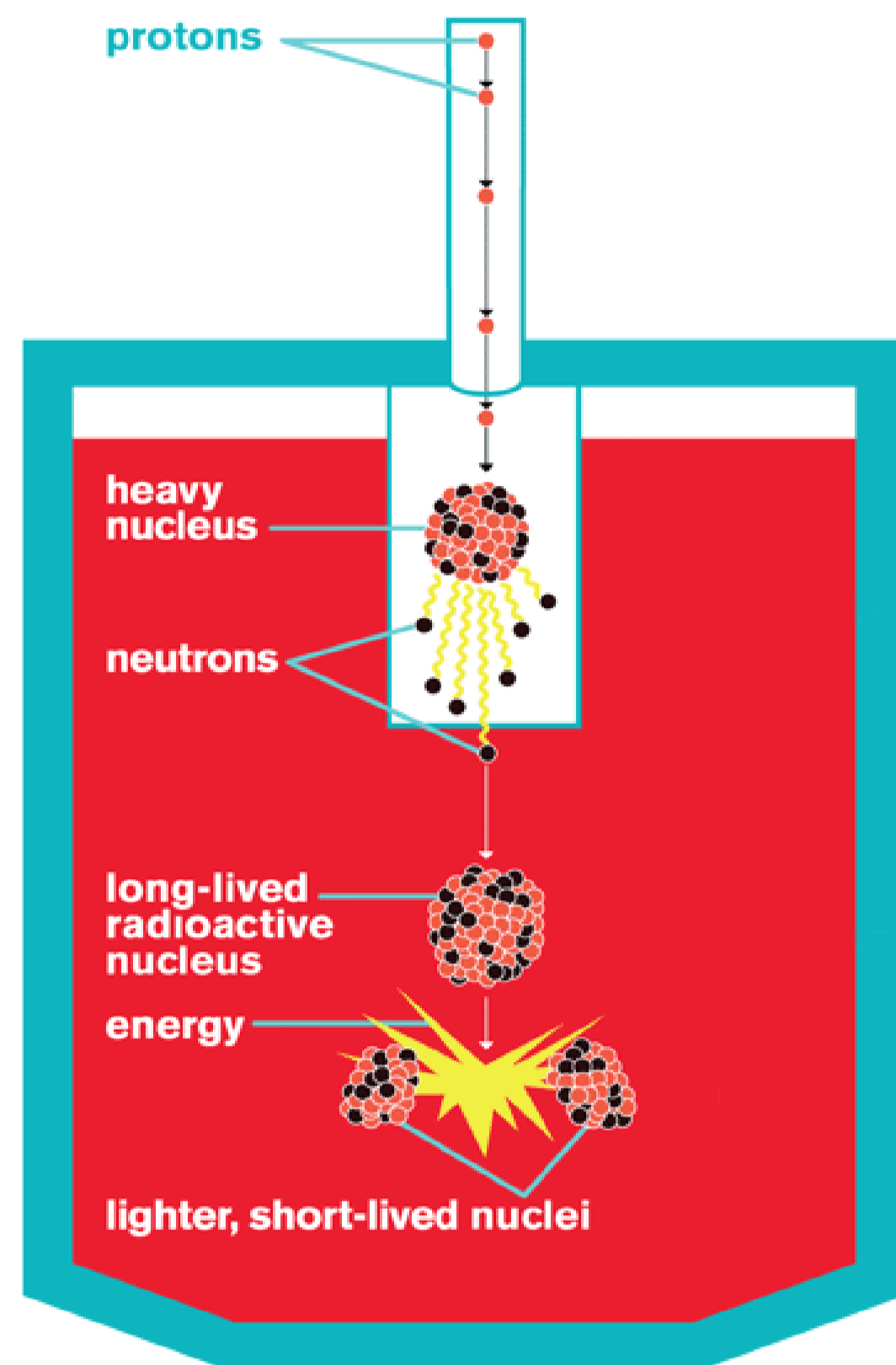## More and more applications use particle accelerators

Hadron Therapy

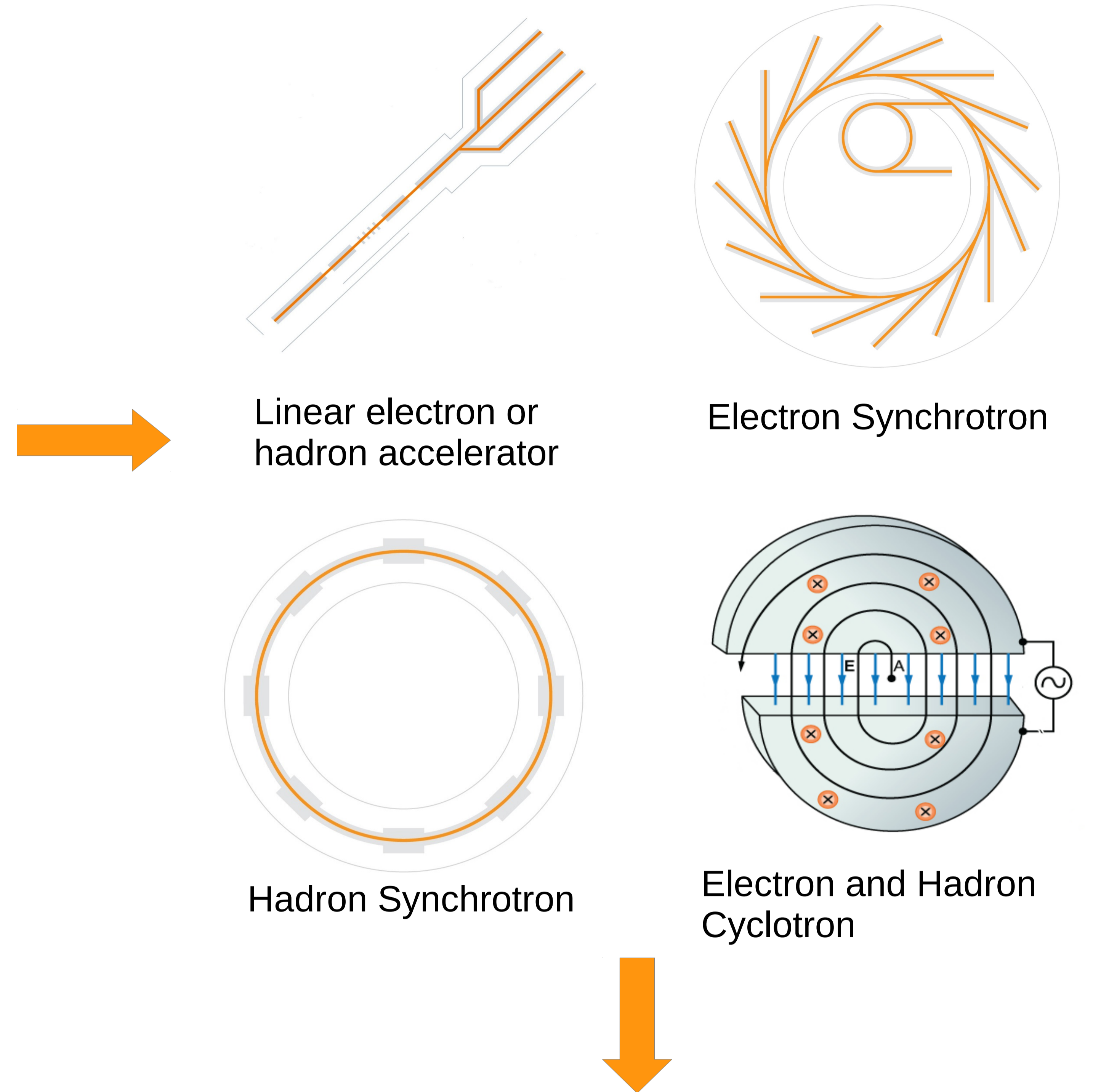Food Irradiation

Origin of matter and the universe

Nuclear waste transmutation

Drug development

Different accelerators and particle types

Linear electron or hadron accelerator

Electron Synchrotron

Hadron Synchrotron

Electron and Hadron Cyclotron

What do you learn?

- Analog signal processing (filtering, amplifiers, mixers, etc..)
- Analog to Digital signal conversion
- Digital signal processing in FPGA (time and frequency domain)
- Real-time Software development in embedded systems
- Graphical User Interface (GUI) development
- Design of Printed Circuit Boards (PCBs)
- Feedback systems
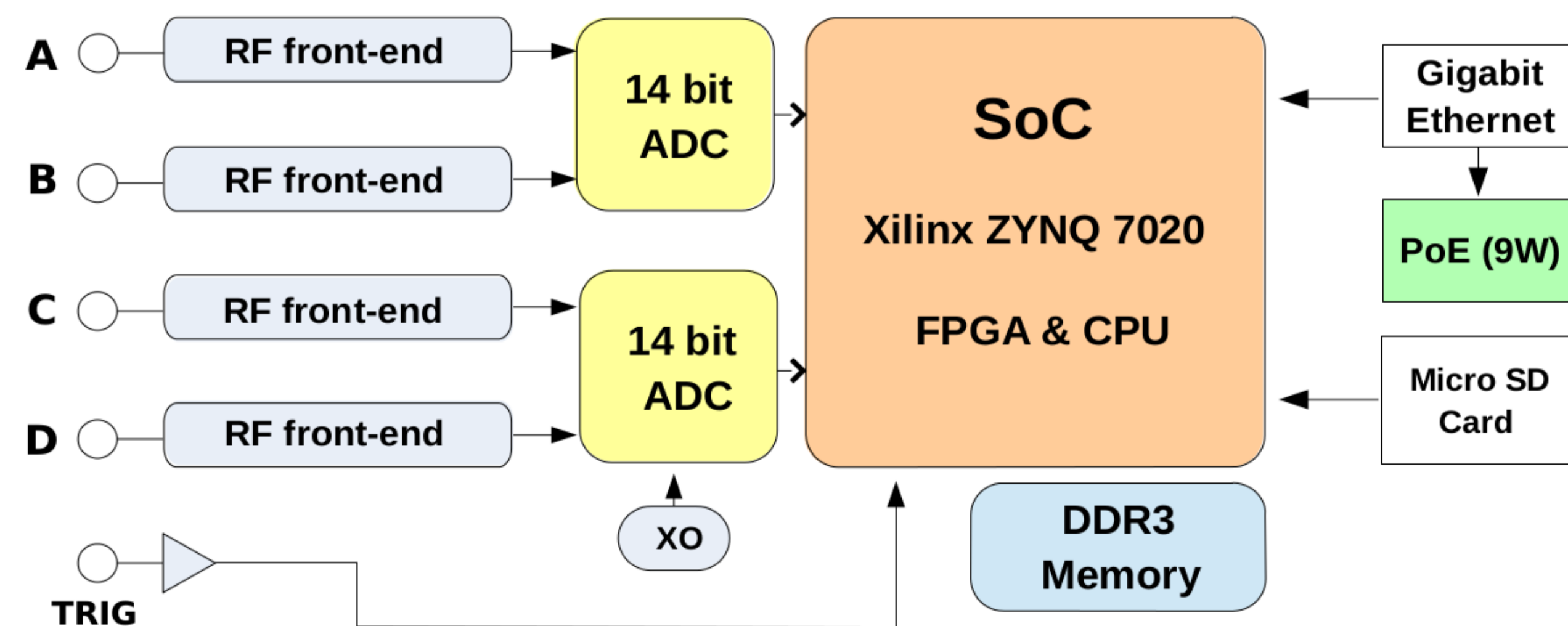- Collaborate with a widely spread international community

Common need: What is the beam position?
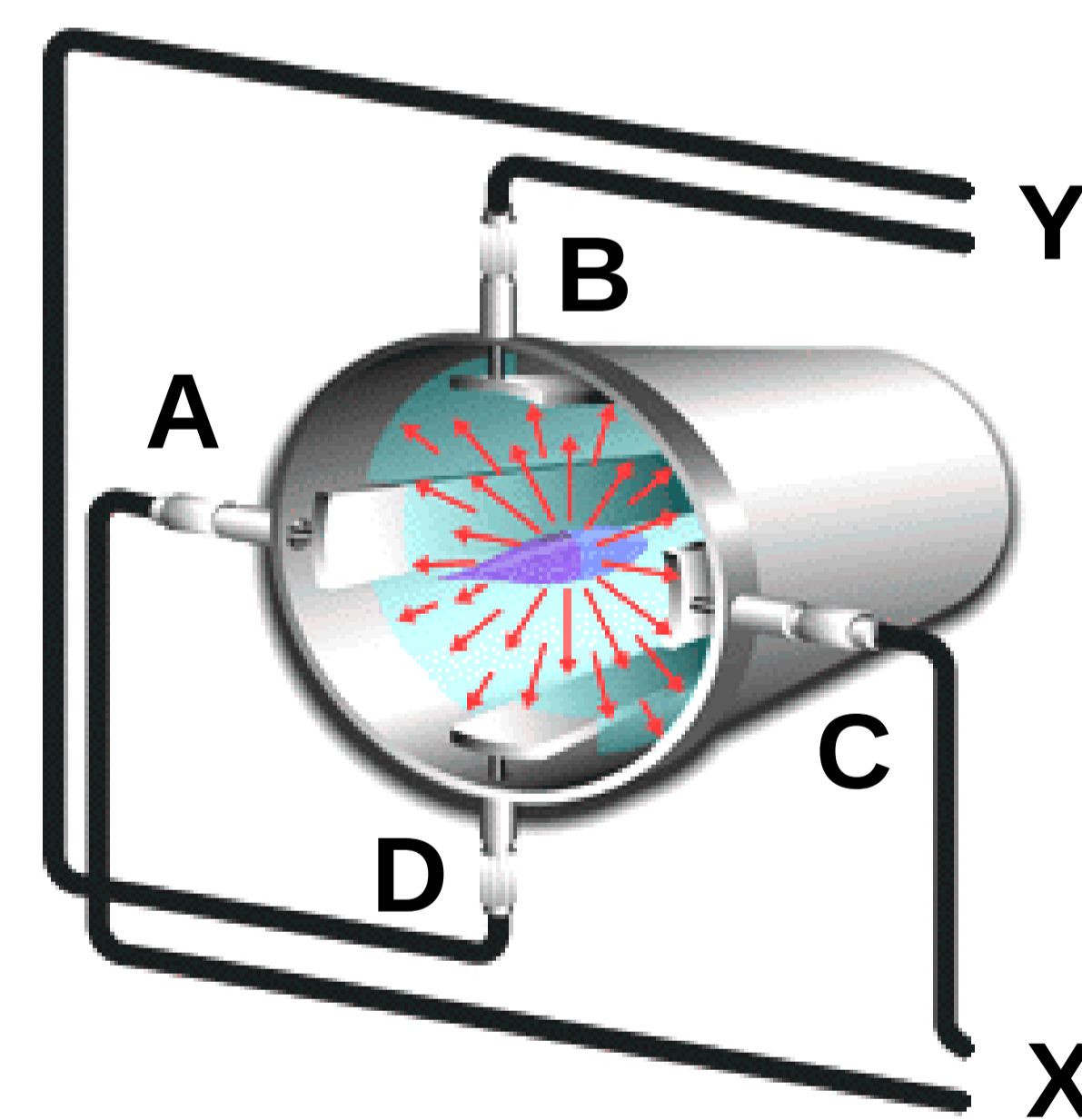
$$Y = K_Y \frac{(V_B' - V_D')}{(V_B' + V_D')} + Y_{OFFSET}$$

$$X = K_X \frac{(V_A' - V_C')}{(V_A' + V_C')} + X_{OFFSET}$$

What we develop: all in one solutions

Hi-end: performance, modular, flexible.

Best price-performance ratio: easy to use, compact, open.