



# A RAPID SR-90 DETERMINATION IN MILK

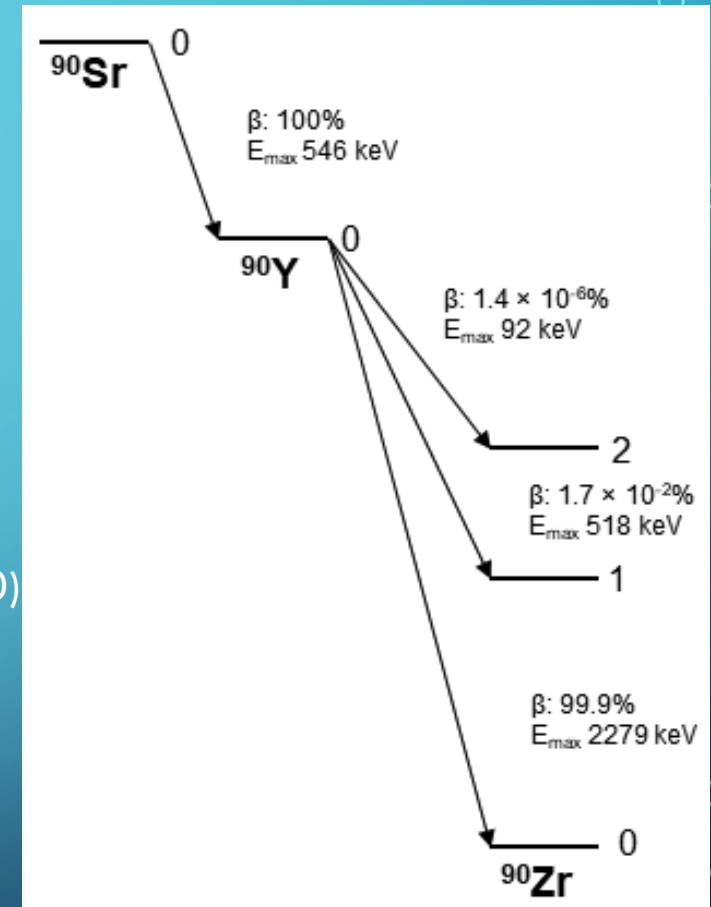
EUROPEAN SUMMER SCHOOL 2024

GROUP 4: DR. OLIVIER COURSON, DR. SYLVIA GEORG

KUWATA HARUKA, ABED EYA, KITAYAMA YUISA, MELESHENKOVSKII IAROSLAV, DOKL  
MATIC

# SR-90

- Strontium-90 is a radioactive isotope produced by
  - Some natural occurring elements (U, Th)
  - Nuclear weapons fallout
  - Nuclear accidents (Chernobyl, Fukushima)
- Pure beta emitter with no gamma signal
  - Pure beta daughter with very weak gamma signal (Y-90)



# GOAL

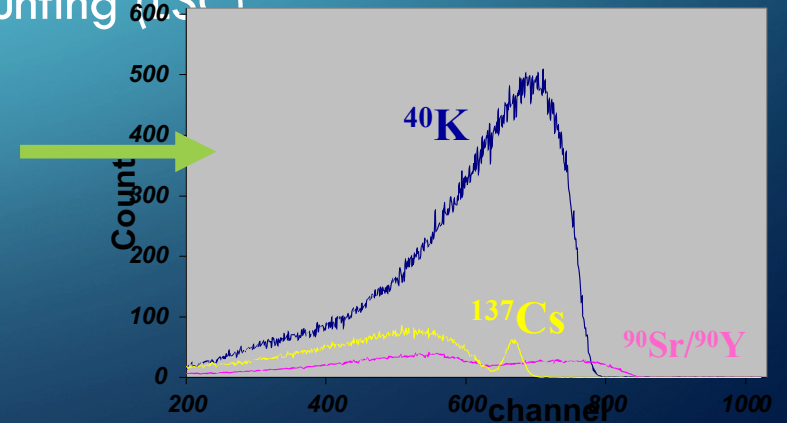
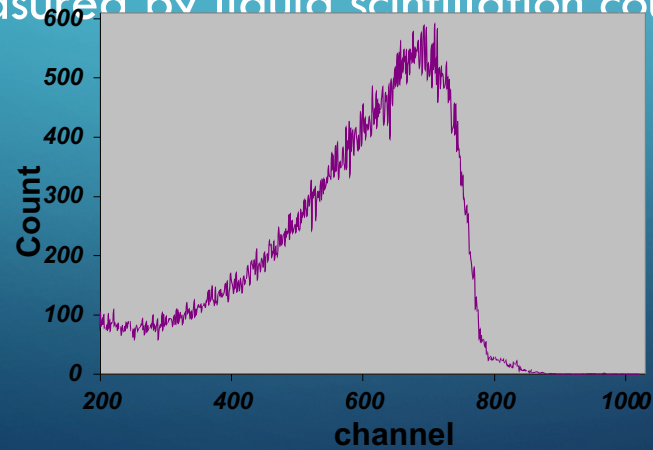
- Determination of Sr in milk samples
  - For protection of public health (food chain)

# MEASUREMENT PROTOCOL

- Only measured by beta, interferences from  $^{40}\text{K}$ ,  $^{90}\text{Y}$ ,  $^{137}\text{Cs}$ 
  - Resin extraction chromatography with Sr-Resin
- Yield measured by ICP-MS



measured by liquid scintillation counting (LSC)





# Measurement protocol



Determination of Sr content in Milk

Evaporation to dryness

Evaporation to dryness

Calcination

Calcination

Dissolution in 3M HNO<sub>3</sub>

Dissolution in 1M HNO<sub>3</sub>

Standard Sr Addition **[Sr]** added

Sr-Spec resin

ICP-MS

**[Sr]** milk

**[<sup>90</sup>Sr]**

LSC

ICP-MS

**[Sr]** residual

