
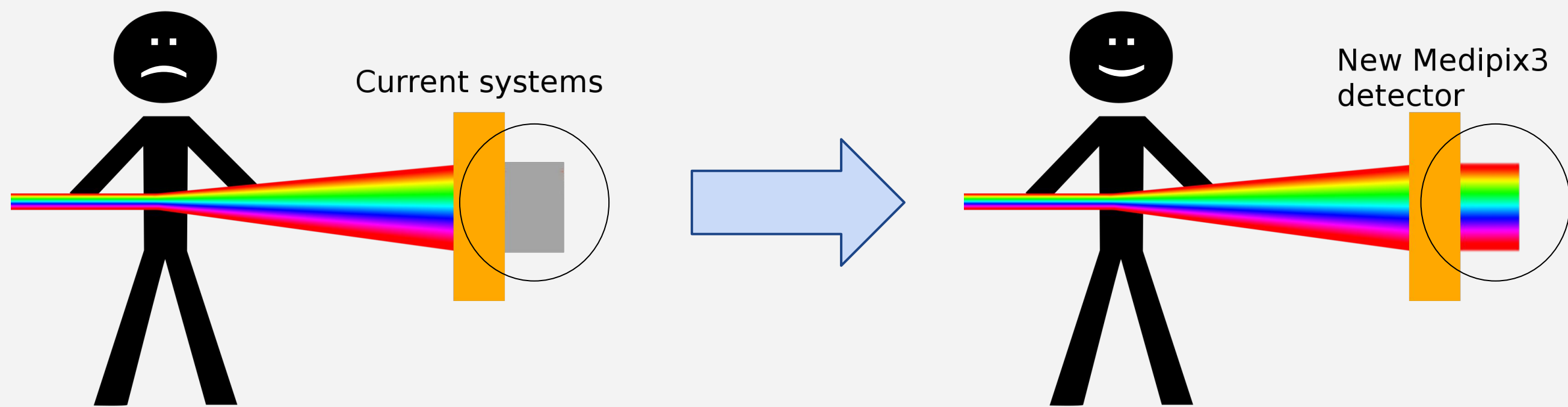


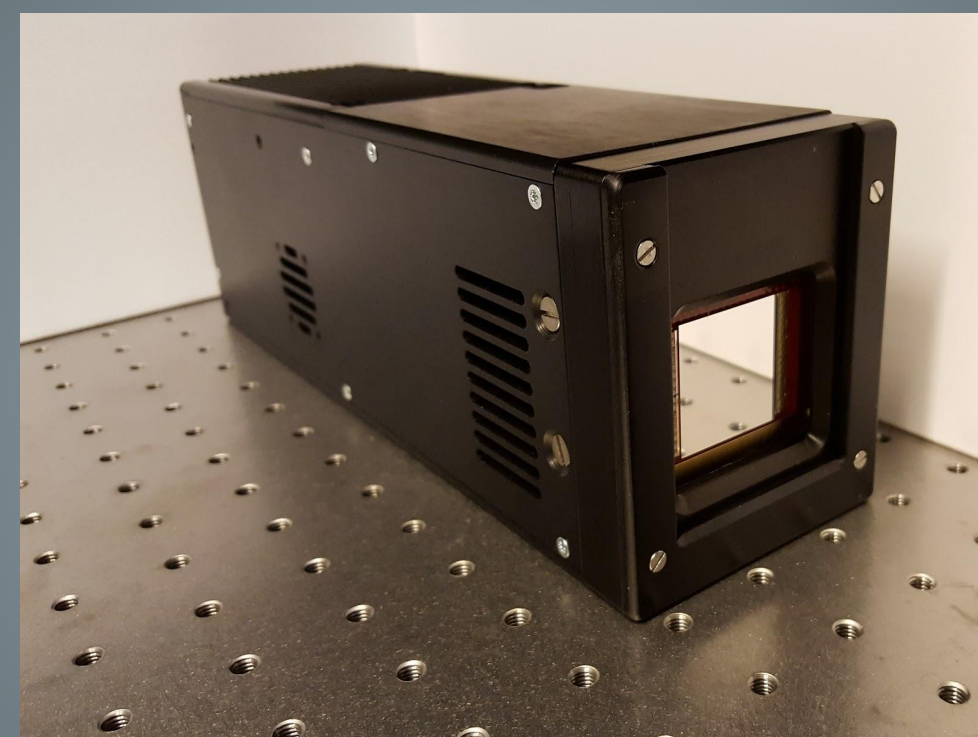
A versatile high-speed radiation detection platform

Introduction

- X-rays are high energy light (photons), a type of radiation
-  X-rays are used for non-invasive medical imaging
- Currently, colour information of the x-rays is not used because of the detector equipment used
 - The new Medipix3 detectors are able to capture multiple colours simultaneously!



What do the detectors look like?



ASI Medipix3RX detector in our new standard x-ray case.

What is my project about?

- Developing and characterising the Medipix3 detector platform
- Finding out how to incorporate the colour information into x-ray CT (Computed Tomography) scans
- Helping the other OMA (Optimisation of Medical Accelerators) fellows by pushing the state-of-the-art detector technology

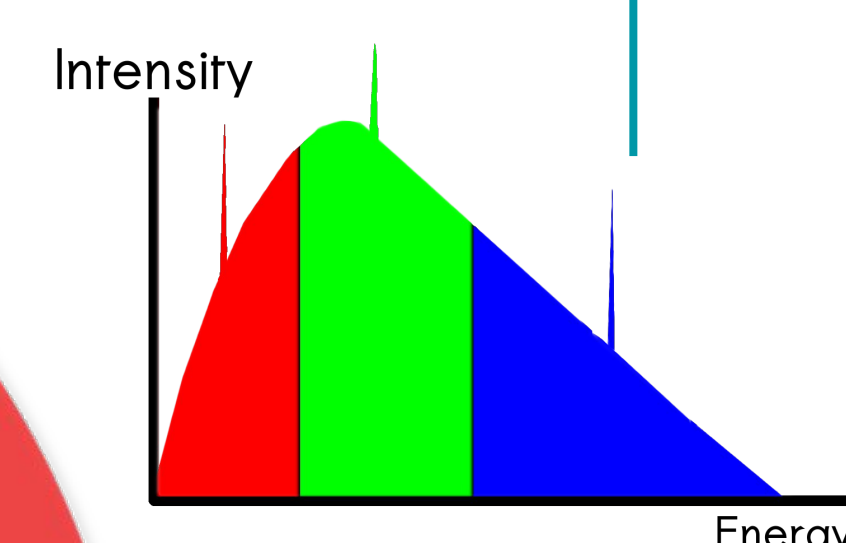
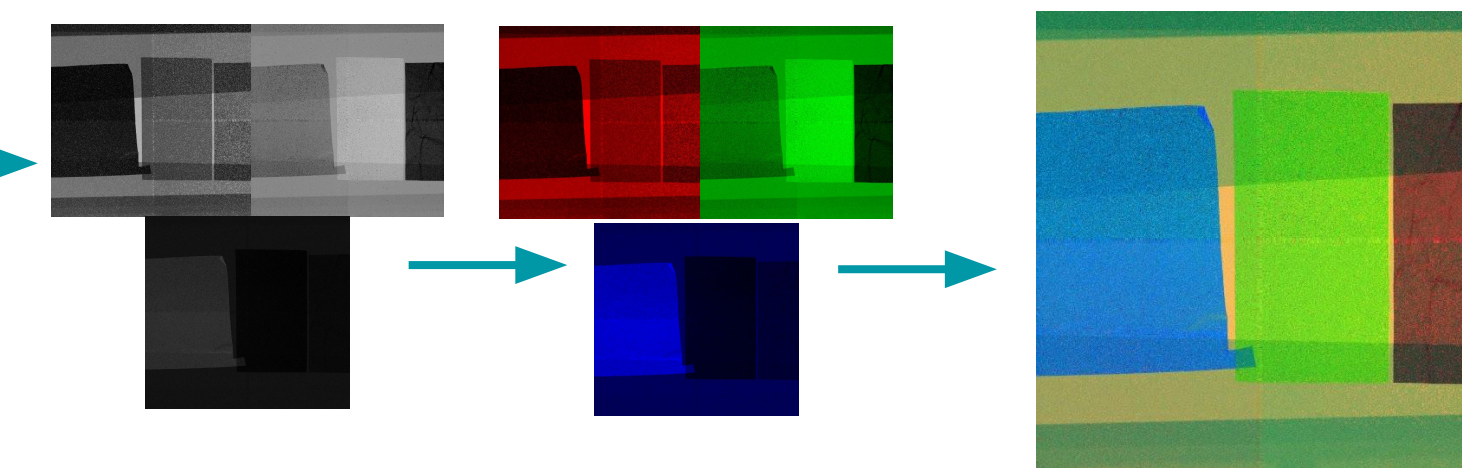
For the 2nd OMA school: Monte Carlo Simulations at LMU Munich, Germany - 5-14 November 2017



Colour x-ray reconstruction



Colour x-ray test object, made of 3 elements, pure samples



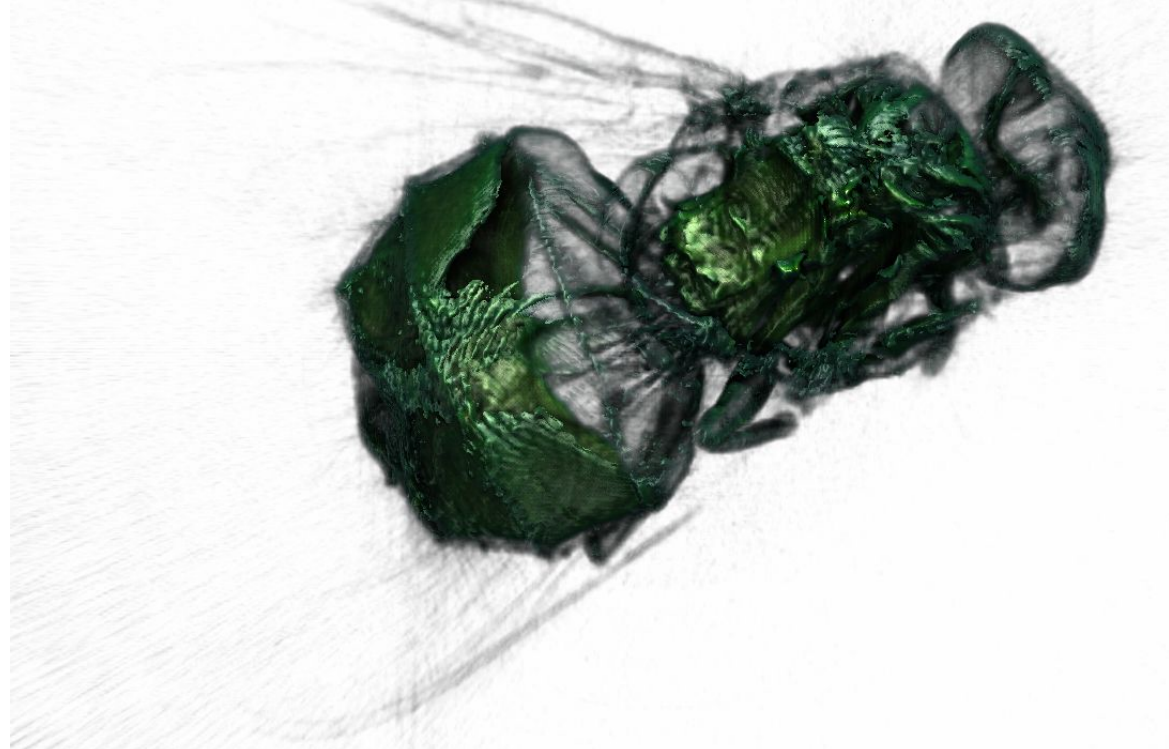
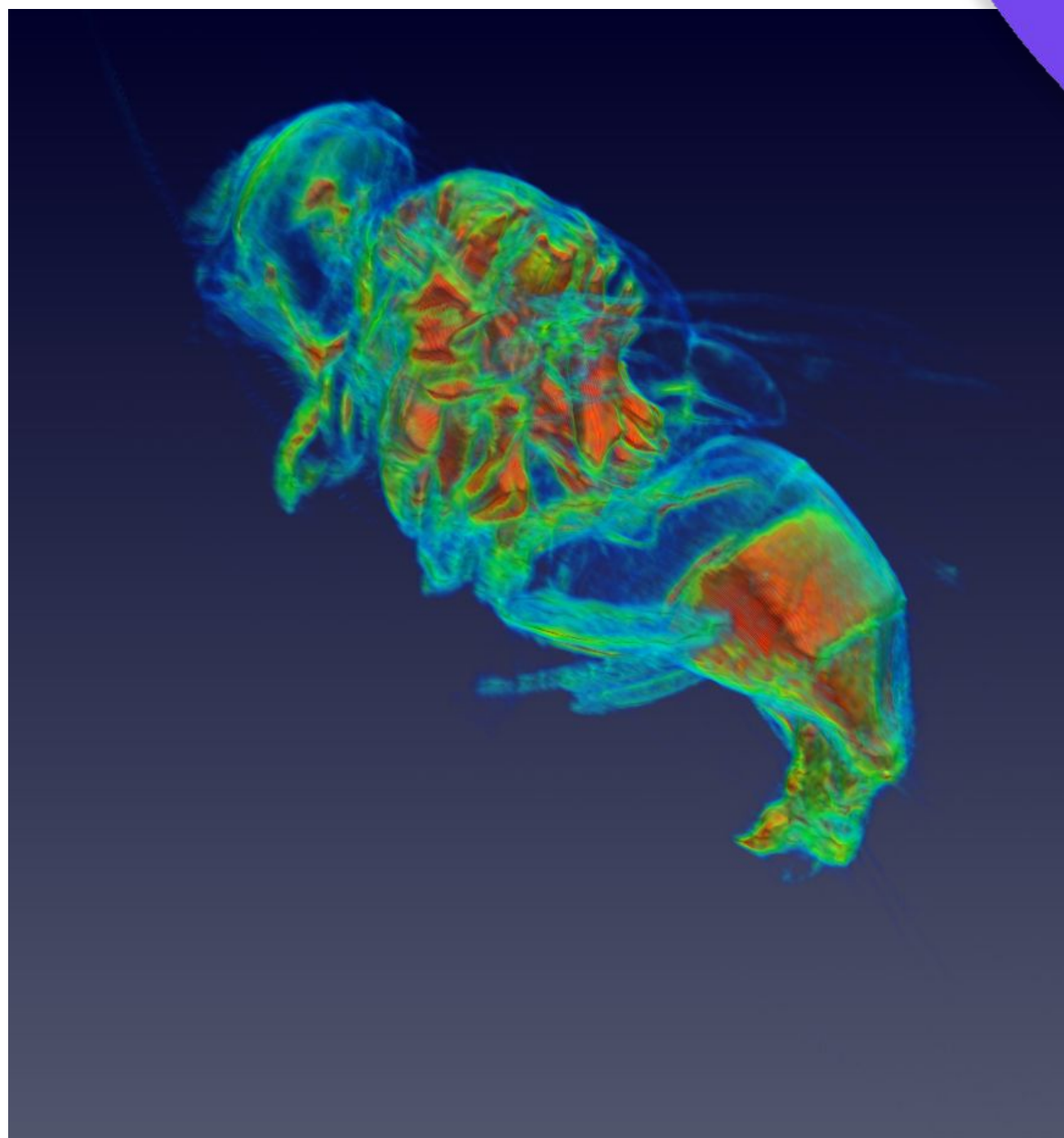
In a 2D projection, it is impossible without prior knowledge to distinguish 2 overlaying materials from 1 more attenuating material. Therefore, this 2D method needs 3D information, a CT scan.

A CT scan with this colour information is required to differentiate multiple layers from each other.

Colourful
x-rays

Navrit Bal

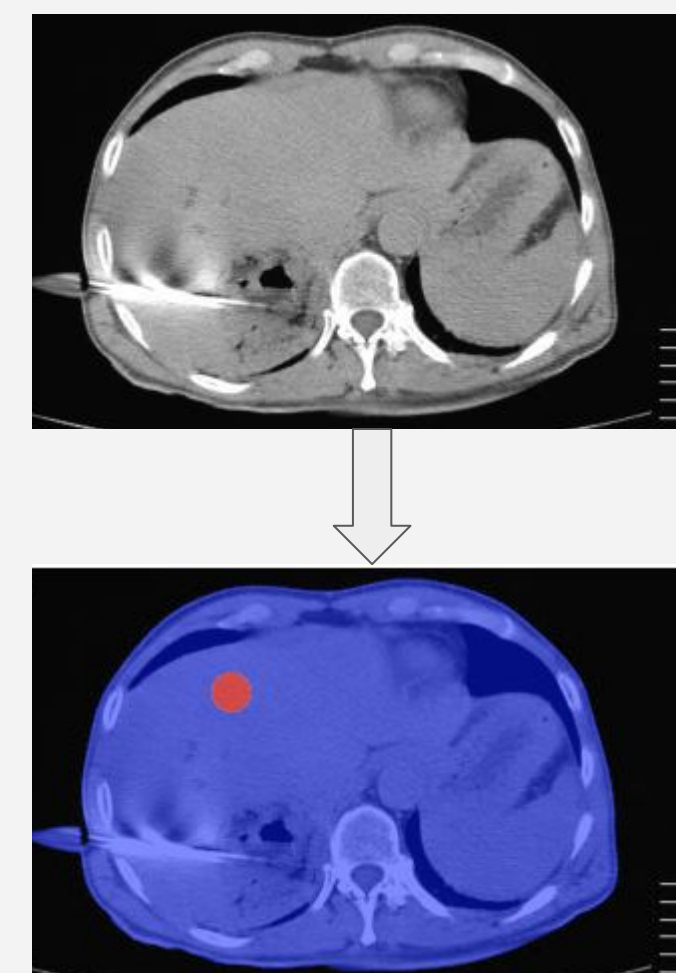
Computed Tomography reconstruction



X-ray CT (Computed Tomography) reconstructions of a common housefly

Colour scale for illustration purposes

Using colour information from the x-rays will help radiologists localise cancers faster, more accurately and with the same or less dose



Maria Skłodowska-Curie (A.K.A. Marie Curie) was a Polish-French physicist and chemist.

She pioneered research into radioactivity, discovering the elements polonium and radium.

"During World War I, she developed mobile radiography units to provide X-ray services to field hospitals."

"She was the first woman to win a Nobel Prize, the first person and only woman to win twice, the only person to win a Nobel Prize in two different sciences, and was part of the Curie family legacy of five Nobel Prizes..."

"In science, we must be interested in things, not in persons"

Marie Curie

"A scientist in his laboratory is not a mere technician: he is also a child confronting natural phenomena that impress him as though they were fairy tales."

Marie Curie

The Periodic Table



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