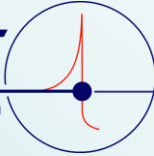


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A low energy pepper-pot emittance device

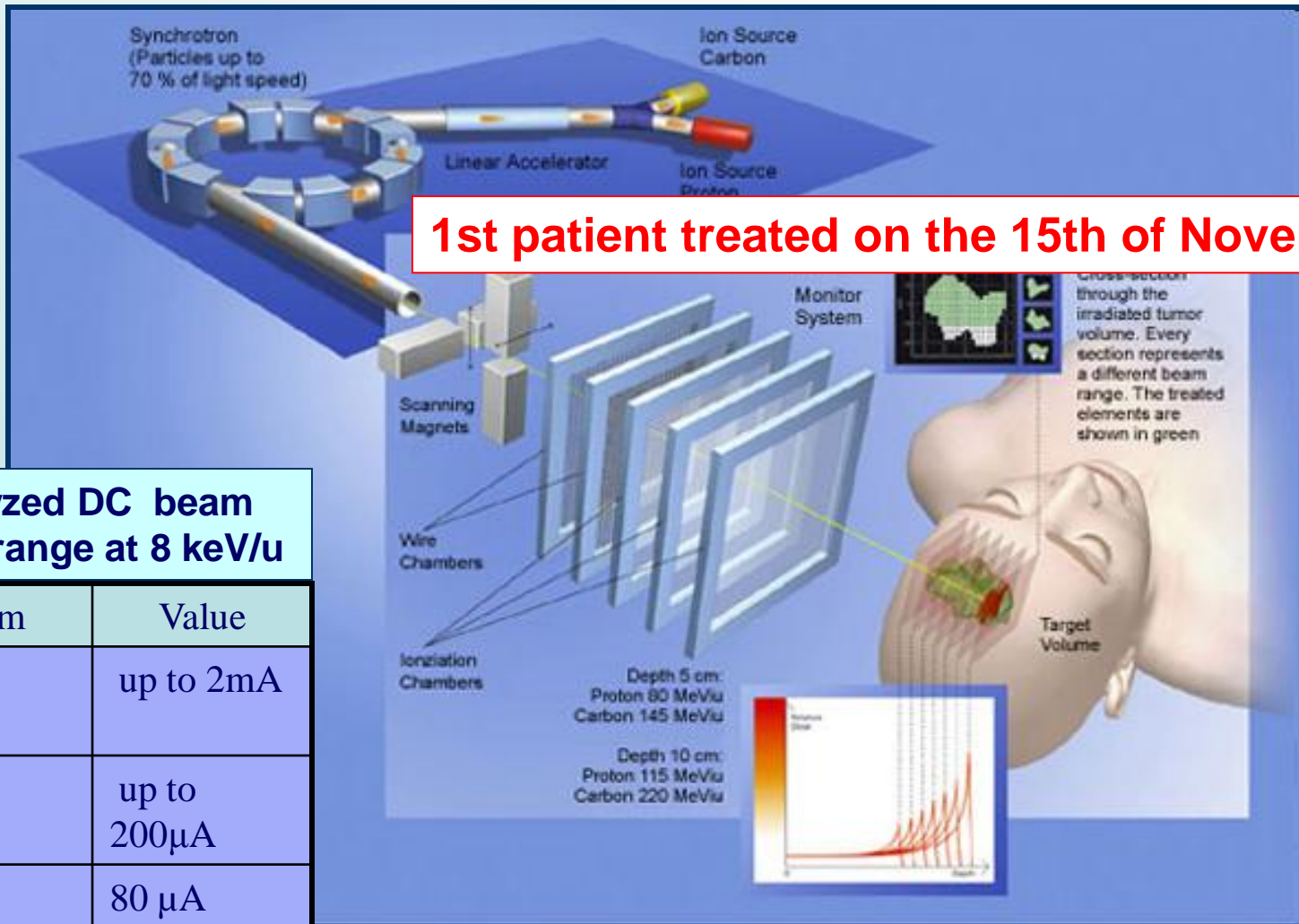
Marion RIPERT



HIT Betriebs GmbH am
Universitätsklinikum Heidelberg
mit beschränkter Haftung

<http://www.hit-centrum.de>

Heidelberg Ion Beam Therapy Center



The analyzed DC beam currents range at 8 keV/u

Ion Beam	Value
H2+, resp. H3+	up to 2mA
12C4+	up to 200µA
16O6+	80 µA

Tuning a charged particle accelerator

Need Tools to measure parameters interpret them more quickly and easily

1. Ion Sources

Max Current : 2 mA H⁺
200 μ A 12C4⁺

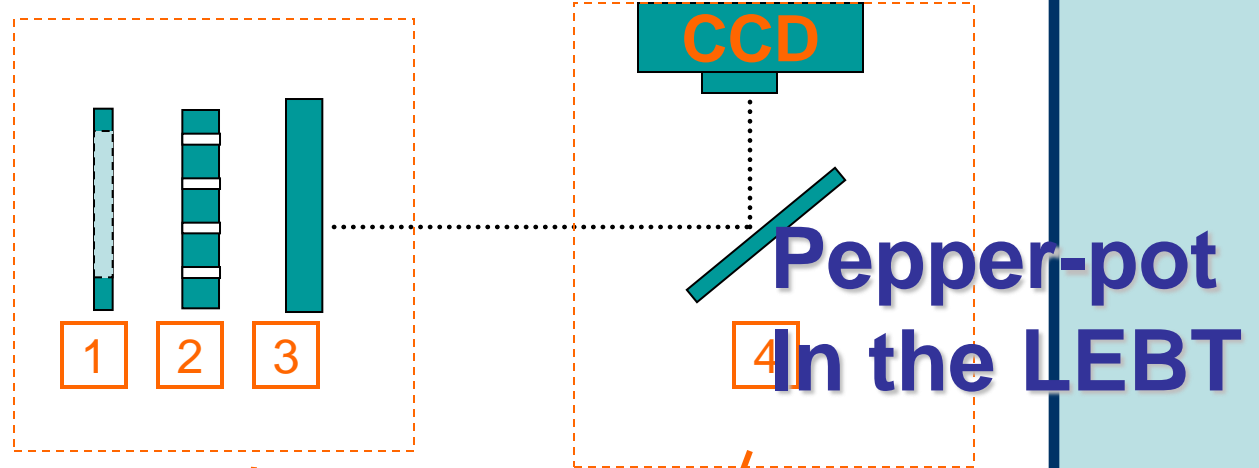
2. Linear Accelerator

Input Energy : 8 keV/u
Output energy
after RFQ: 400 keV /u

3. synchrotron

Output Energy of
IH, Input Energy
of synchrotron :
7 MeV/u

Pepper Pot Screen Scintillator Device

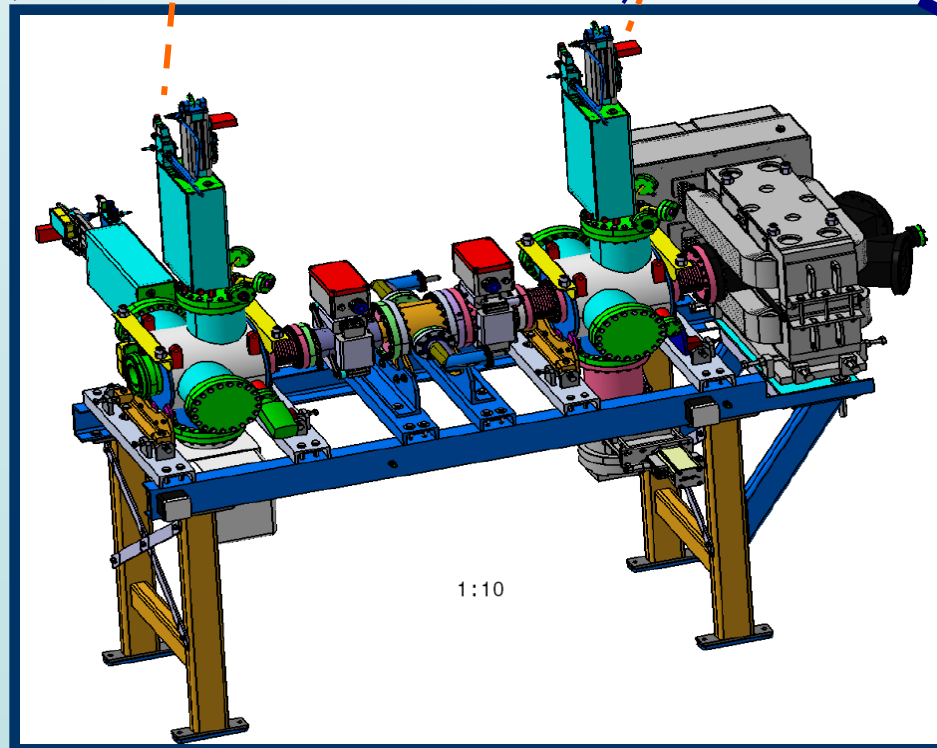


1. Iris Shutter

2. Pepper-pot
Mask (parallel
collimator)

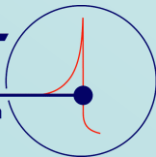
3. Scintillator
Screen

4. Mirror + CCD
camera

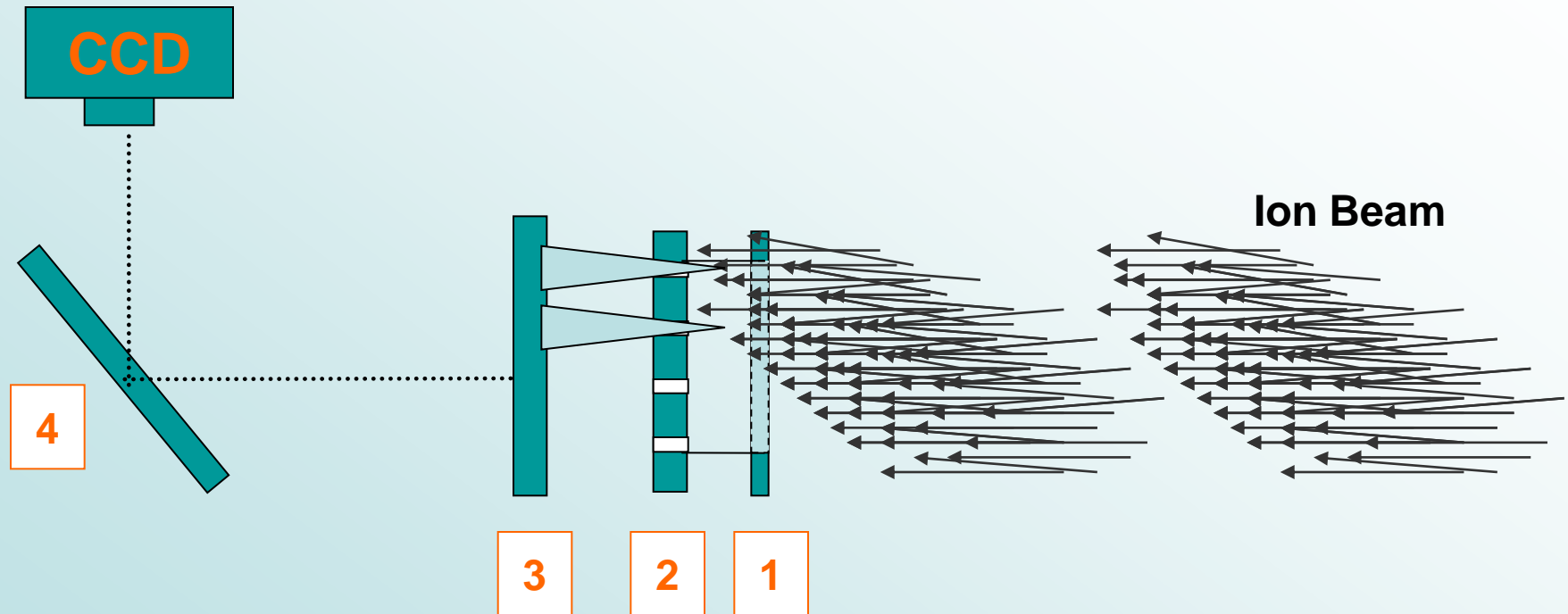


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Pepper Pot Device : A Fast Imaging device



Allow to create an image that portrays the distribution of particles in the beam ("emittance")

Conclusion : What has to be done ...



Data Image Acquisition- LabVIEW

Digital Image Processing and Analysis
program for the pepper pot – MATLAB

First implementation
of the pepper-pot device in September 2010

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