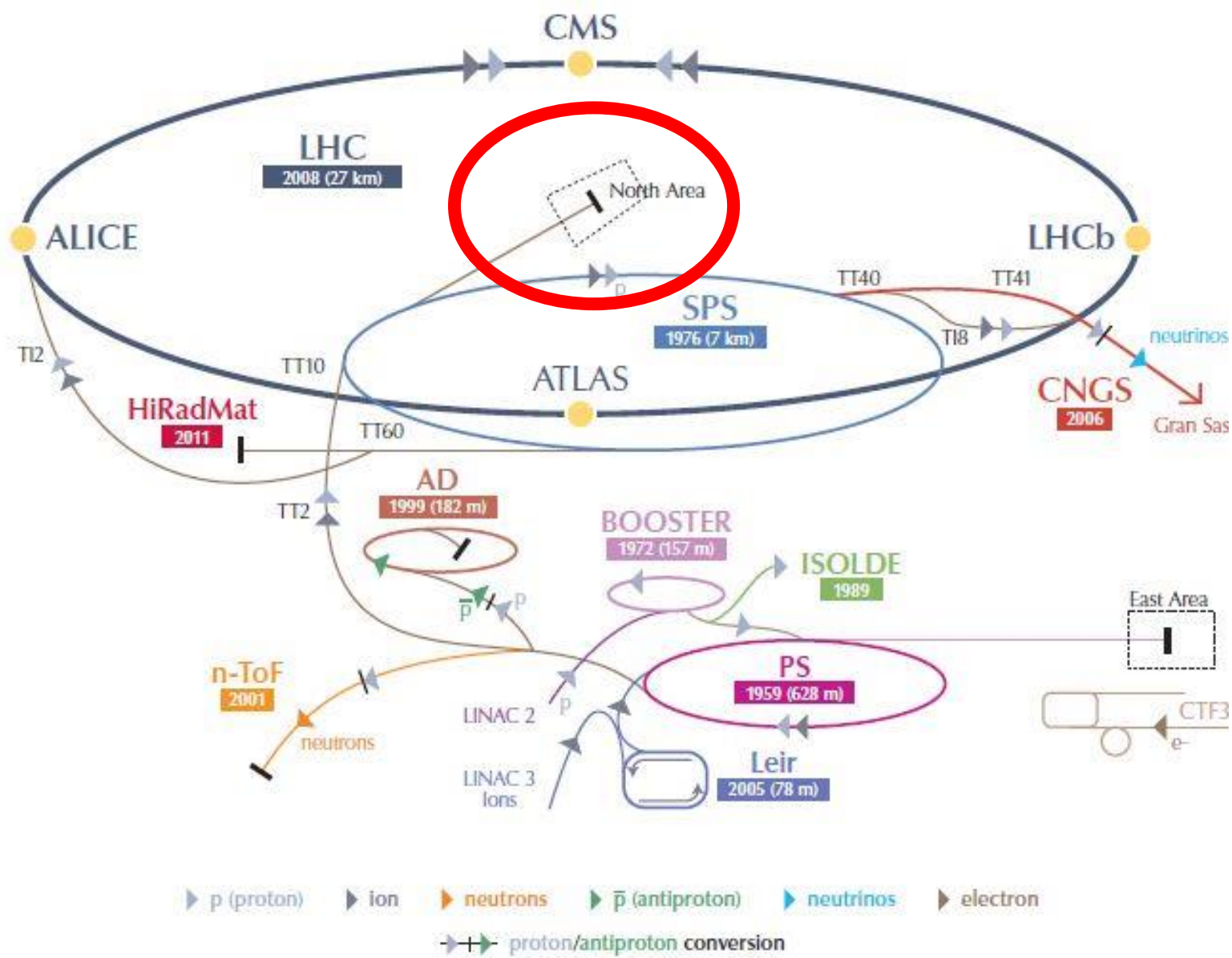




Study of Misalignment in the H4-VLE Beamline of the CERN North Area

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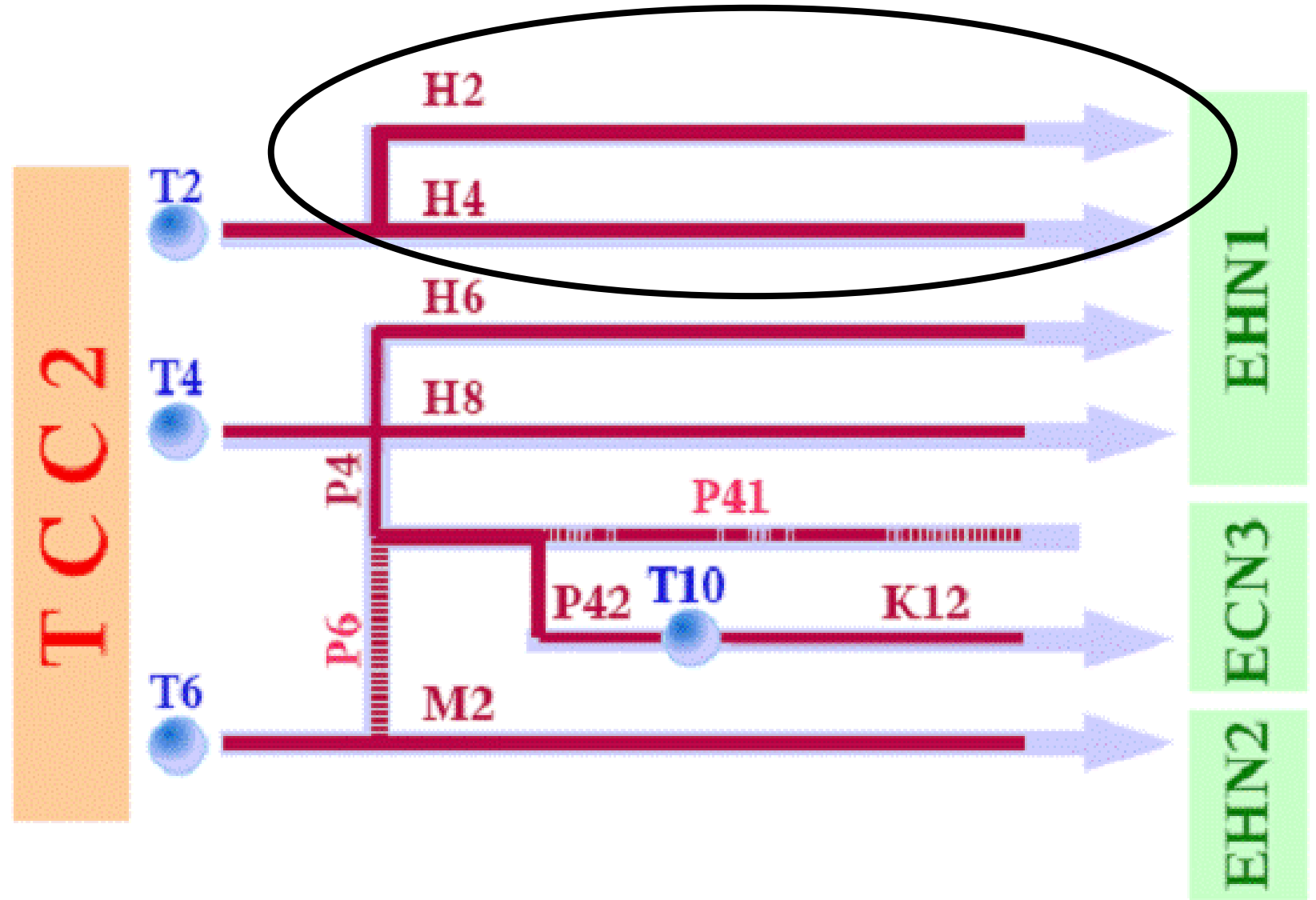


Schematic of
Beamlines at
CERN

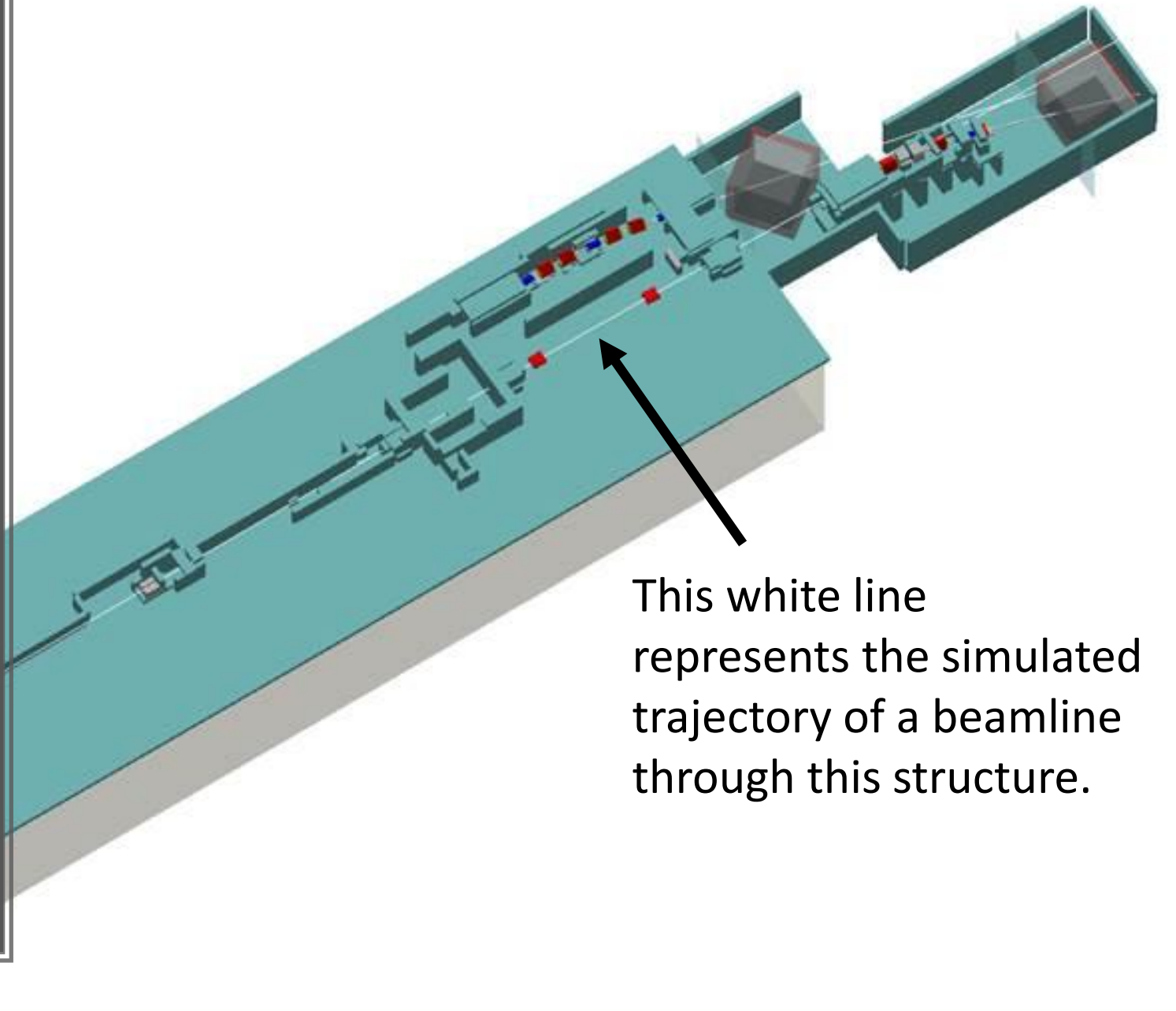
LHC Large Hadron Collider SPS Super Proton Synchrotron PS Proton Synchrotron

AD Antiproton Decelerator CTF3 Clic Test Facility CNGS Cern Neutrinos to Gran Sasso ISOLDE Isotope Separator OnLine DEv
LEIR Low Energy Ion Ring LINAC LINear ACcelerator n-ToF Neutrons Time Of Flight HiRadMat High-Radiation to Materials

The circled beamlines are those which I will be studying. These beamlines will be used as a prototype for the the future DUNE experiment in the United States, which will study neutrinos.

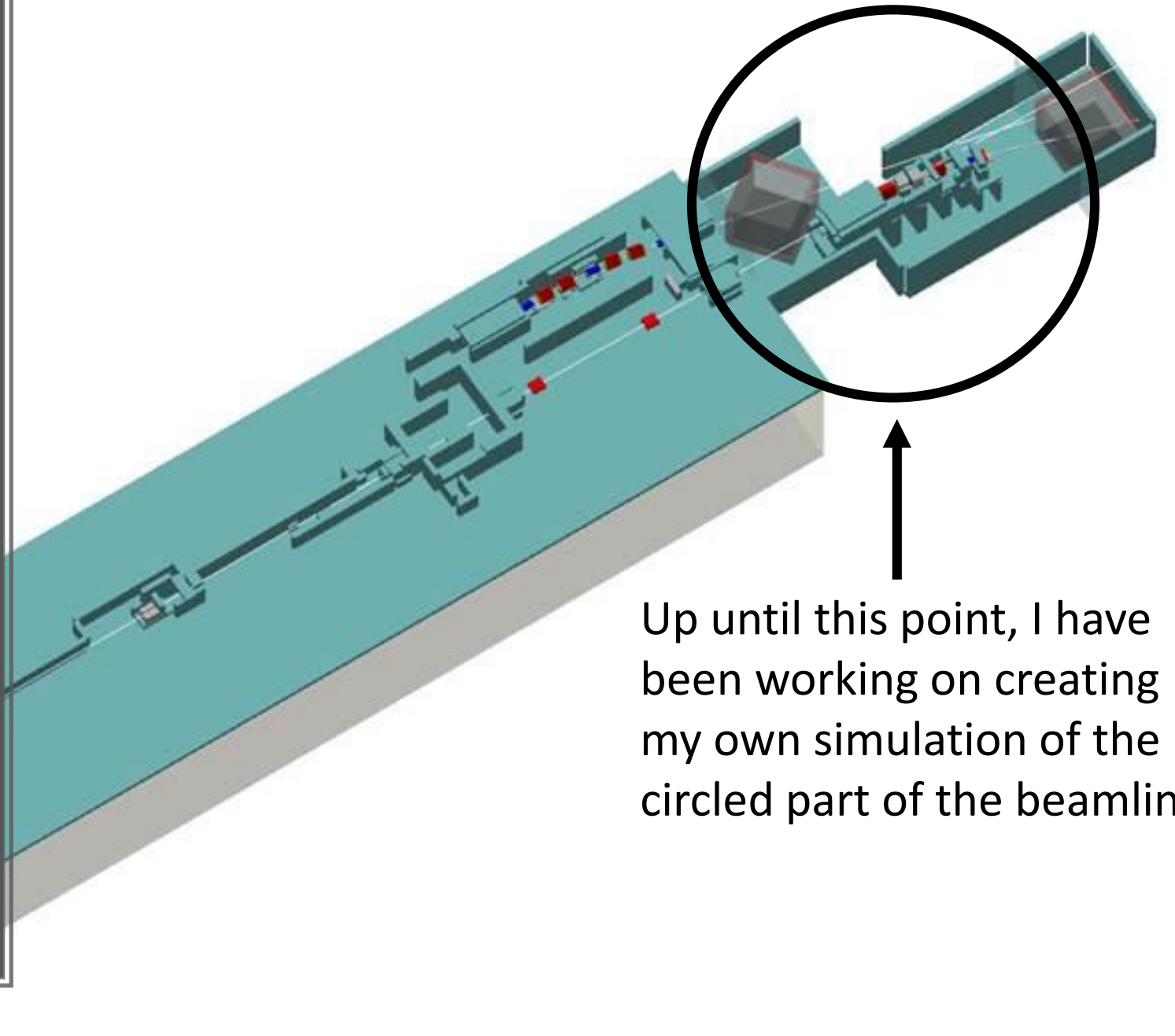


Simulation of the
complete H2 and
H4 Very Low
Energy (VLE)
Beamlines in
G4Beamline



This white line
represents the simulated
trajectory of a beamline
through this structure.

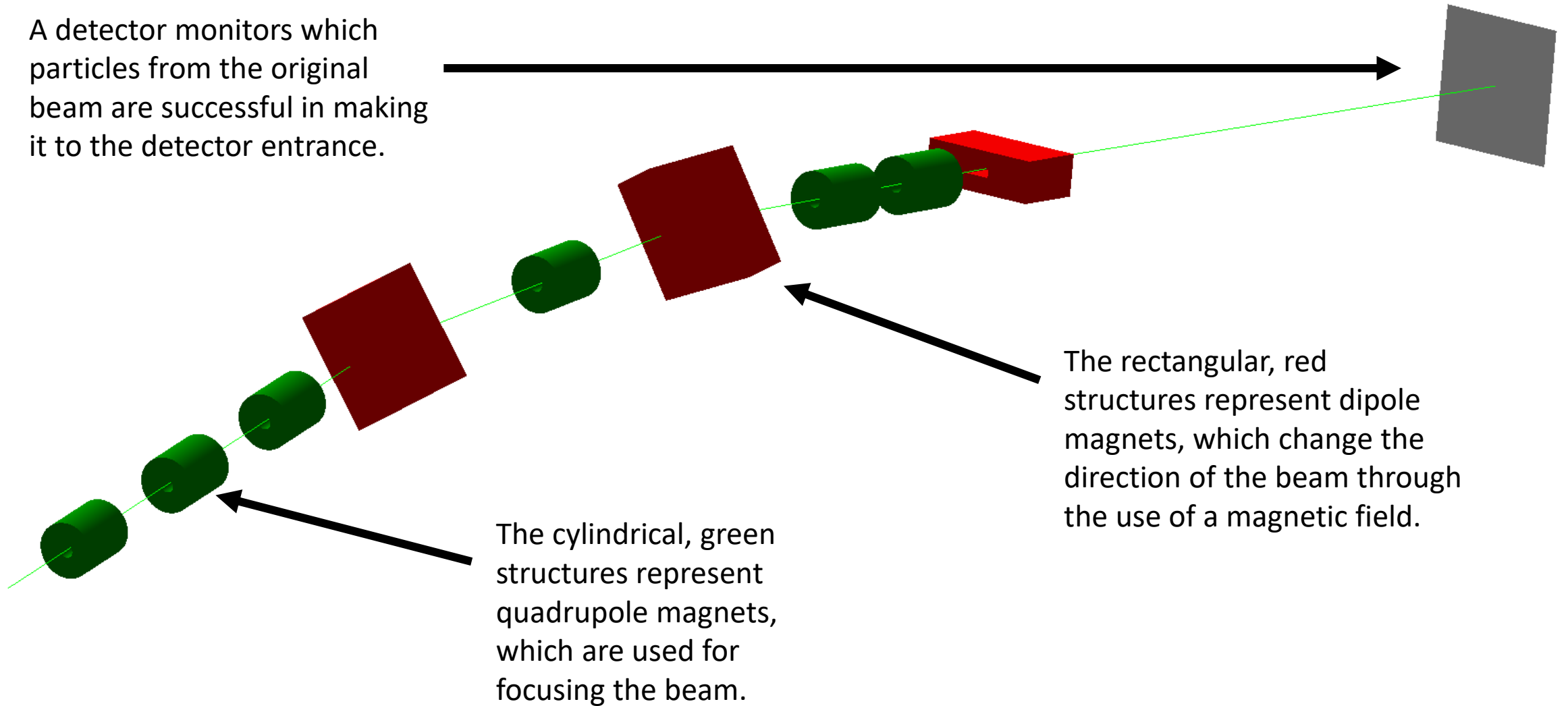
Simulation of the
complete H2 and
H4 Very Low
Energy (VLE)
Beamlines in
G4Beamline



Up until this point, I have
been working on creating
my own simulation of the
circled part of the beamline.

My simulation of the H4-VLE beamline in G4Beamline

A detector monitors which particles from the original beam are successful in making it to the detector entrance.



Questions I
am
investigating:

What would happen if one of the beam elements were displaced/rotated? How would this affect the number of particles that reaches the detector?

How can we correct for misplacement/rotation with the placement of other beam elements?

Which elements of the beam have the greatest effect on the intensity of the beam at the detector entrance?

