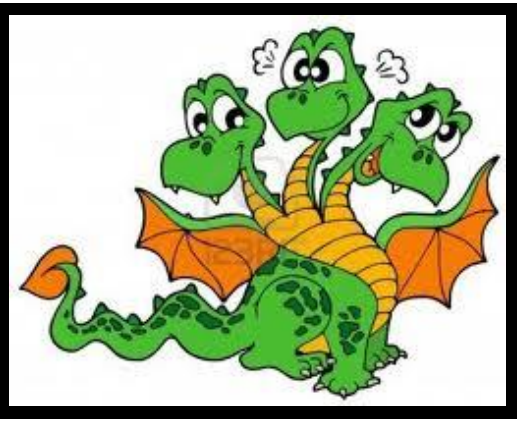
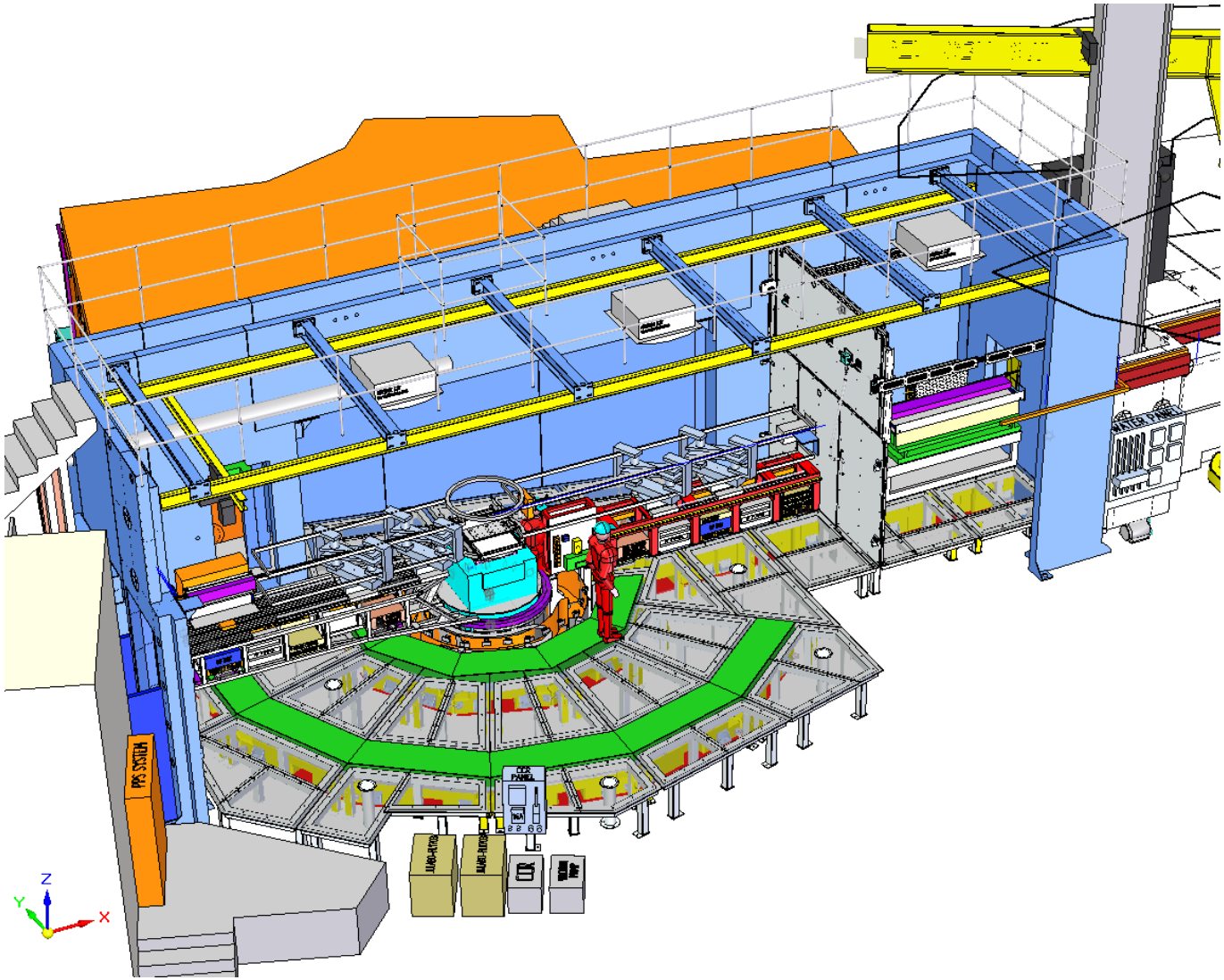
# Larmor

## A multipurpose SANS instrument using Larmor labelling techniques

Delft, 17-12-2014

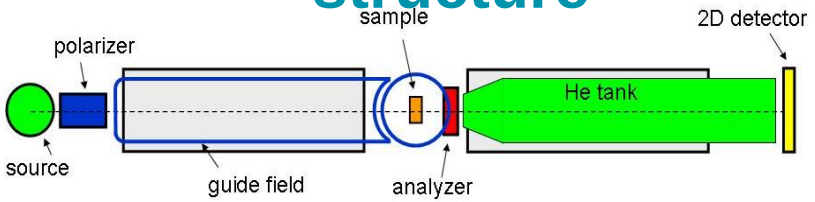


# LARMOR

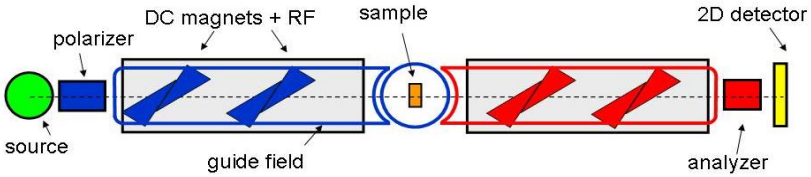


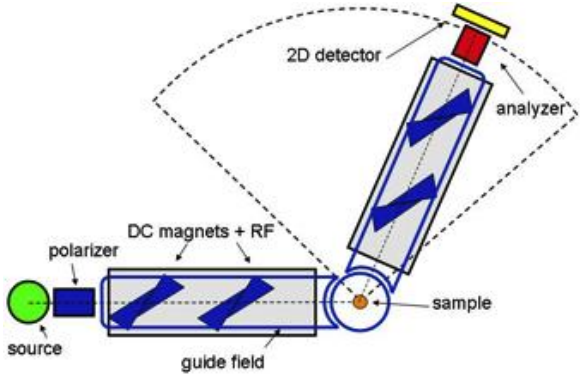
# Modes from proposal

## structure



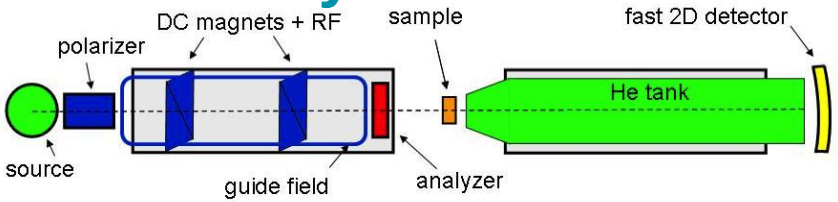

Small Angle Neutron Scattering (SANS)



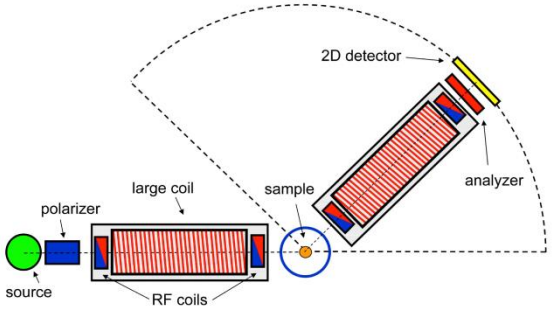




Larmor diffraction

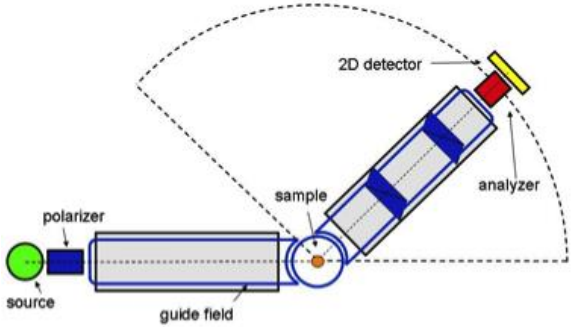
## dynamics




Modulated Intensity Small Angle Neutron Scattering (MISANS)




Neutron Resonance Spin Echo (NRSE)

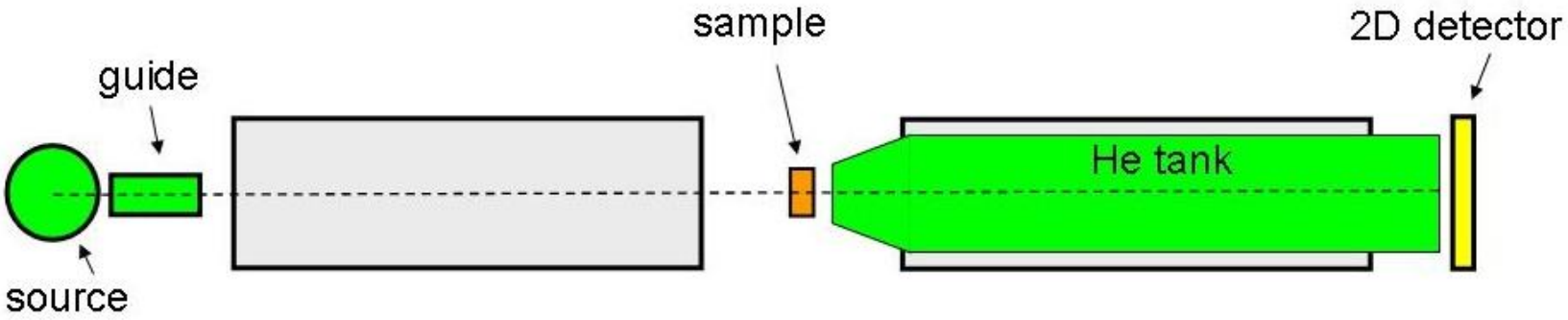



Time-of-Flight Larmor labeling (TOFLAR)

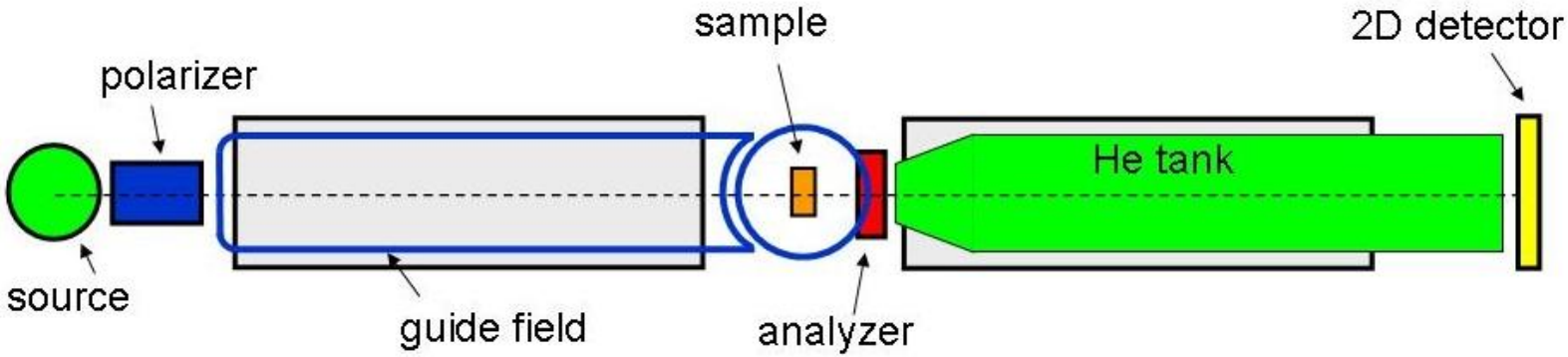
# Modes of LARMOR, stucture

Schematic view of SANS mode with polarisation analysis. Available *Q*-range: 0.05 – 12 $nm^{-1}$. It yields structural information in the range from ~ 1 to 100 nm

**SANS**

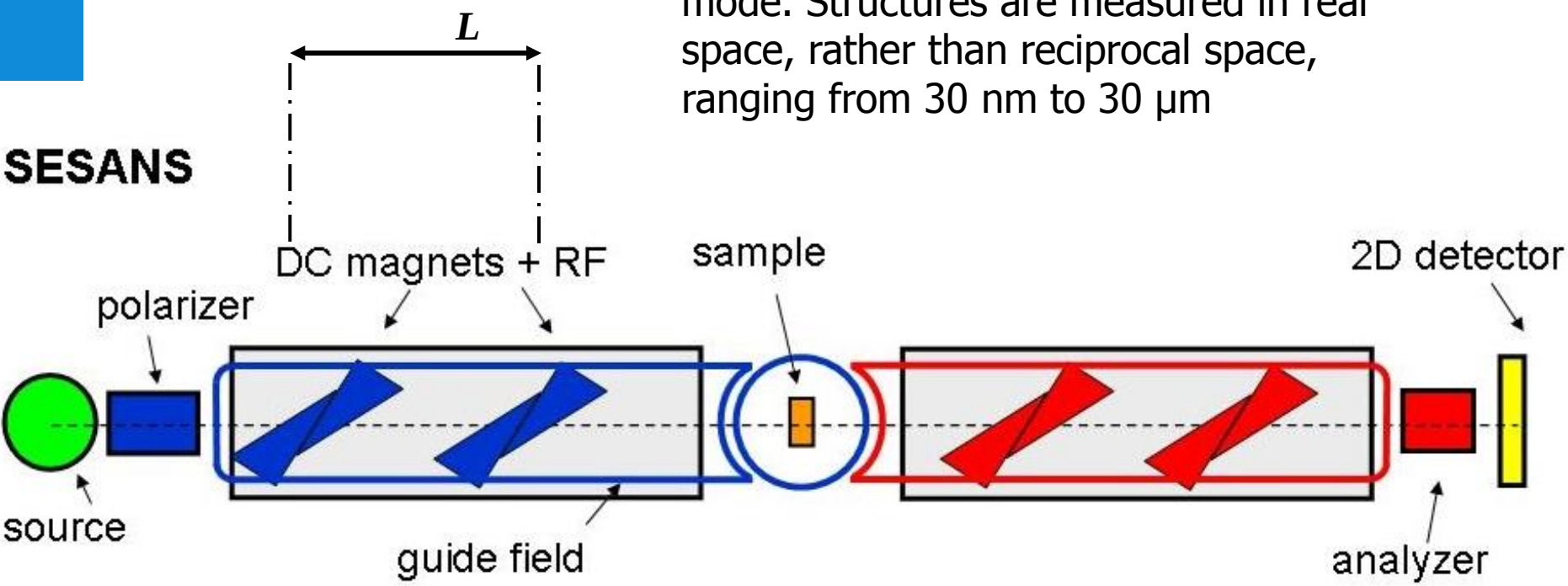



**Polarized SANS**



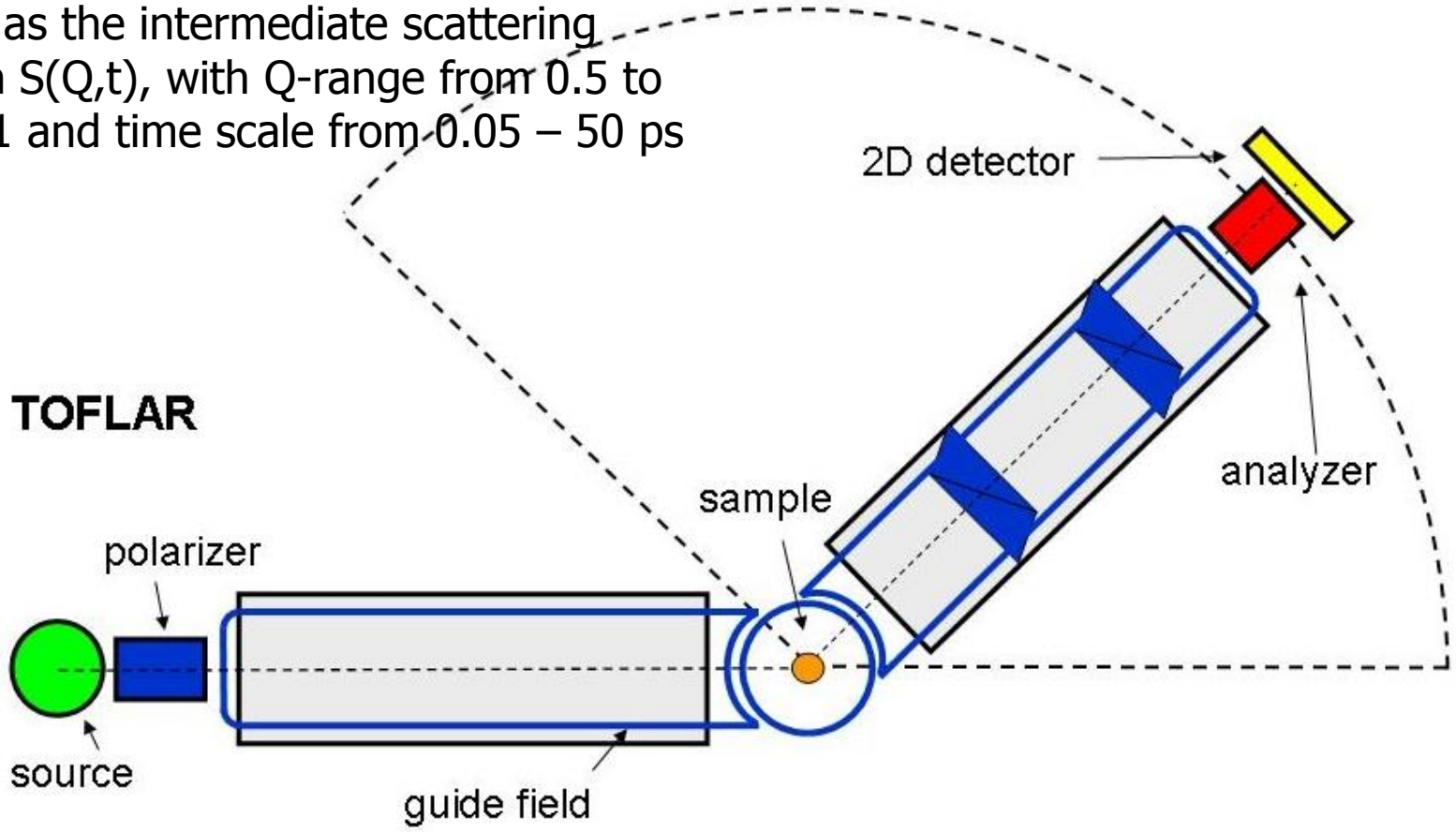
# Modes of LARMOR, structure

Schematic view of the SESANS mode. Structures are measured in real space, rather than reciprocal space, ranging from 30 nm to 30 μm



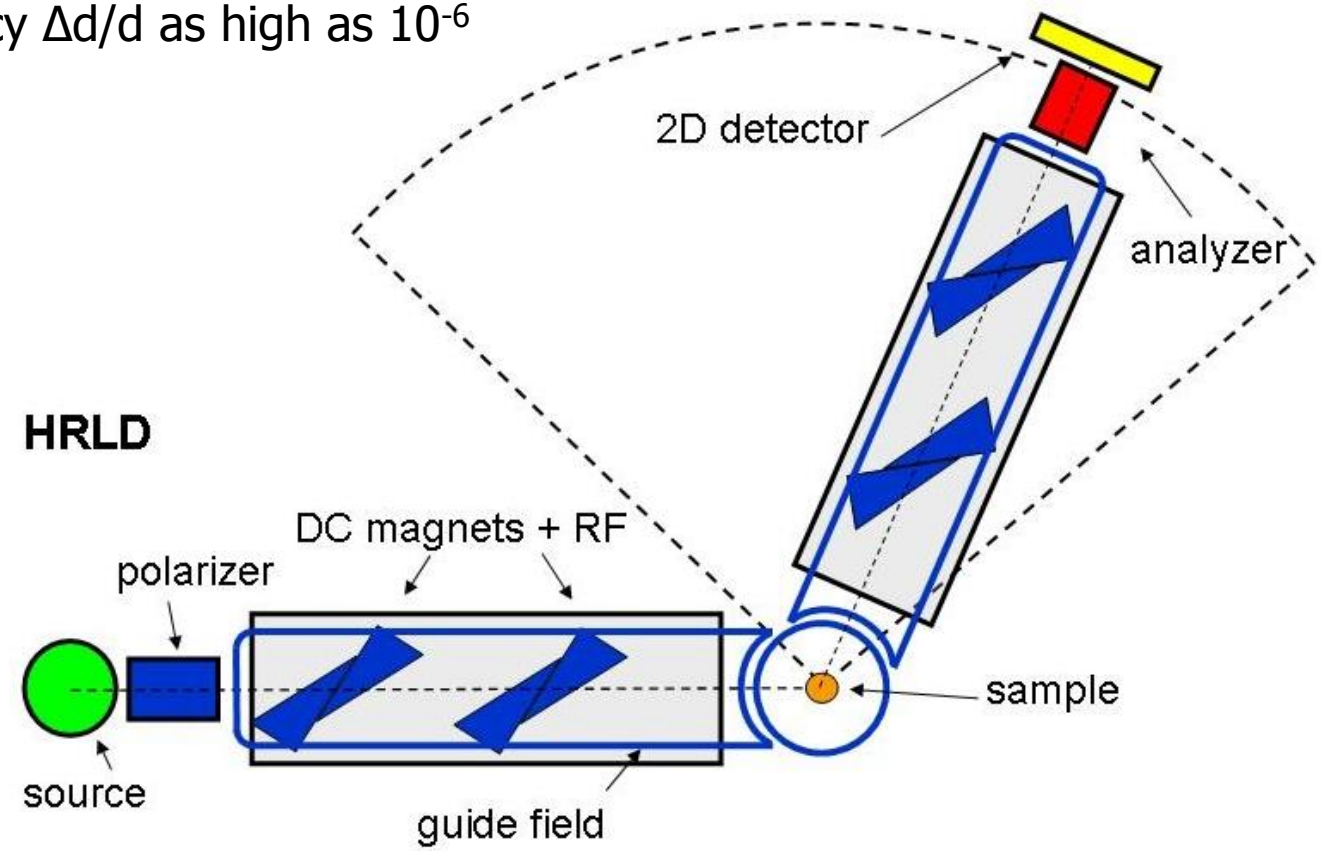
# Modes of LARMOR, time

Schematic view of the TOFLAR mode. Quasielastic scattering is measured directly as the intermediate scattering function S(Q,t), with Q-range from 0.5 to 50 nm-1 and time scale from 0.05 – 50 ps



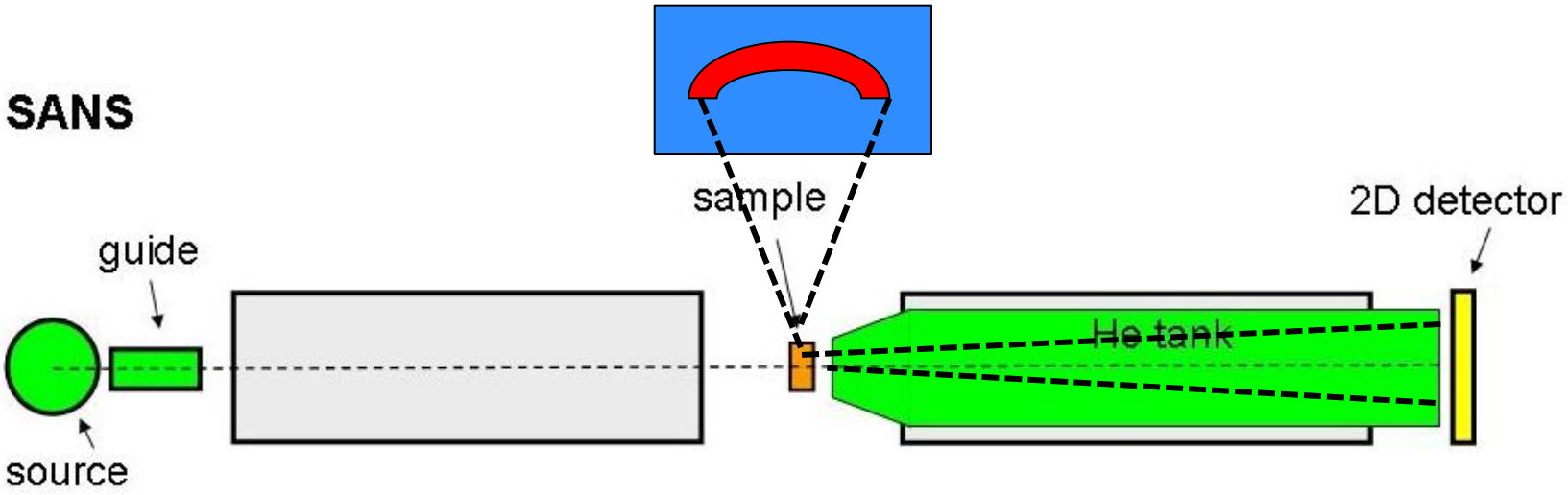
# Modes of LARMOR, structure

Schematic view of the Larmor diffraction mode. Crystal lattice spacing is determined with an accuracy $\Delta d/d$ as high as $10^{-6}$

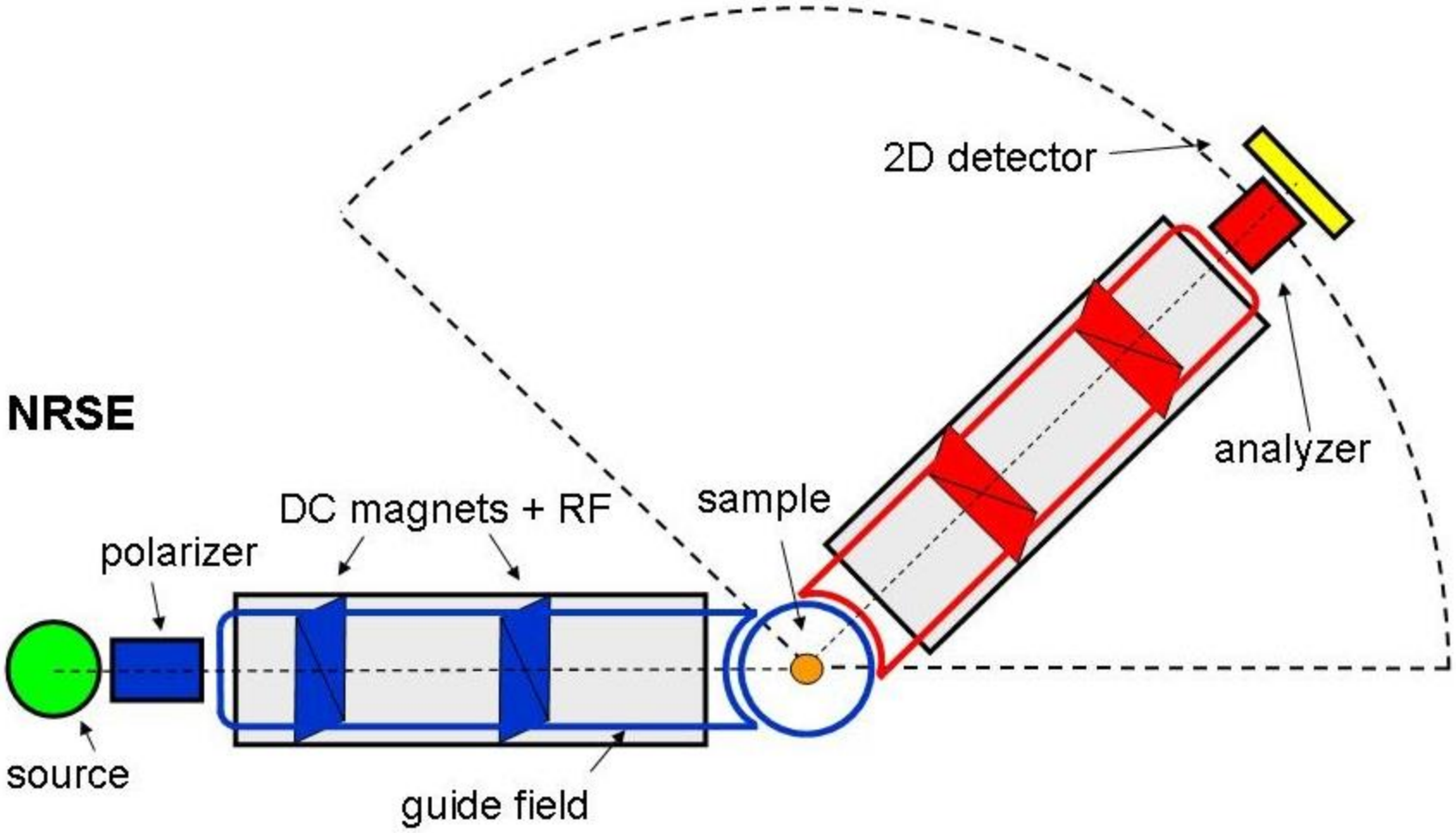


# Modes of LARMOR, Stucture, "new"

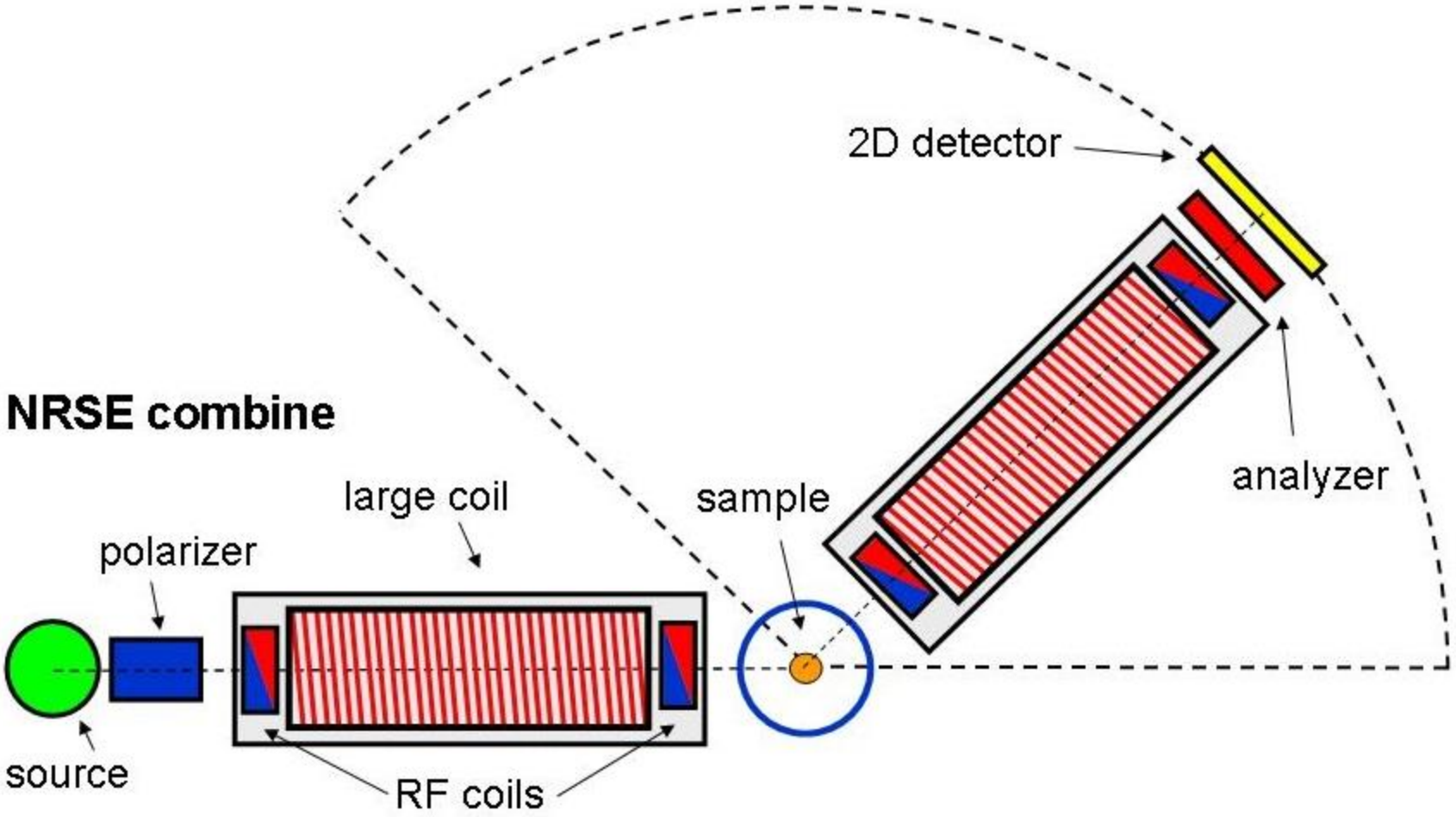
Combination of SANS and Diffraction…new option possible. Affordable detector can be made in Delft with ISIS technology



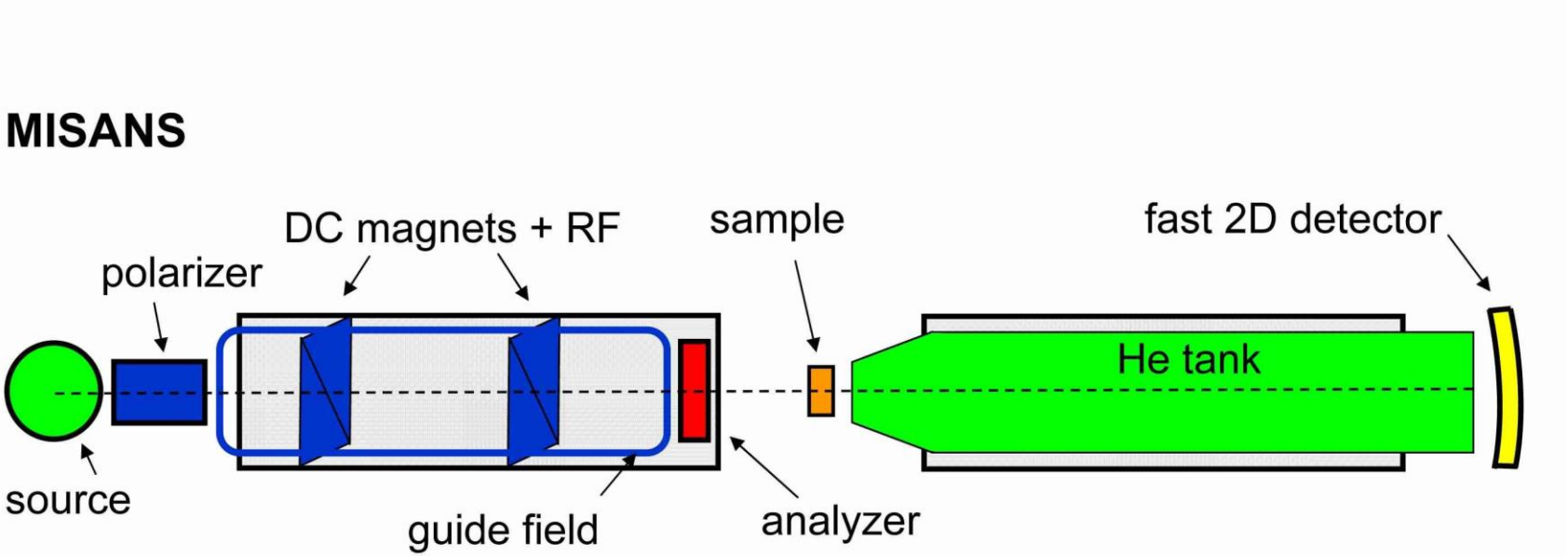
# Modes of LARMOR, time



# Modes of LARMOR, time

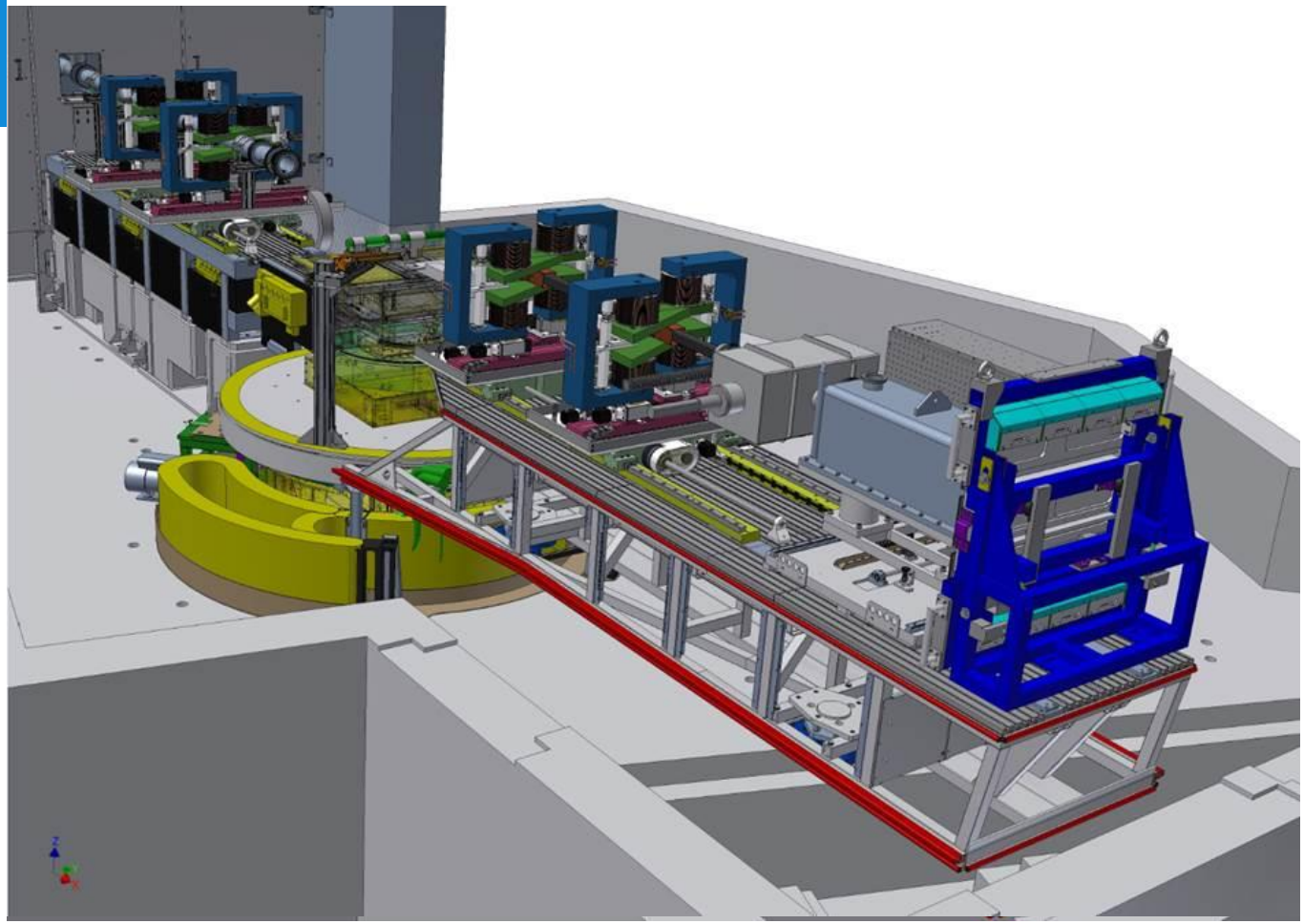


# Modes of LARMOR, time/structure



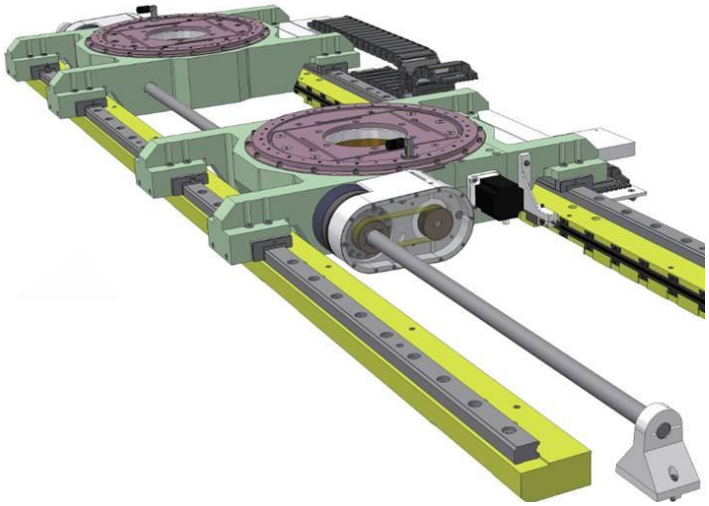
# Delft technical progress

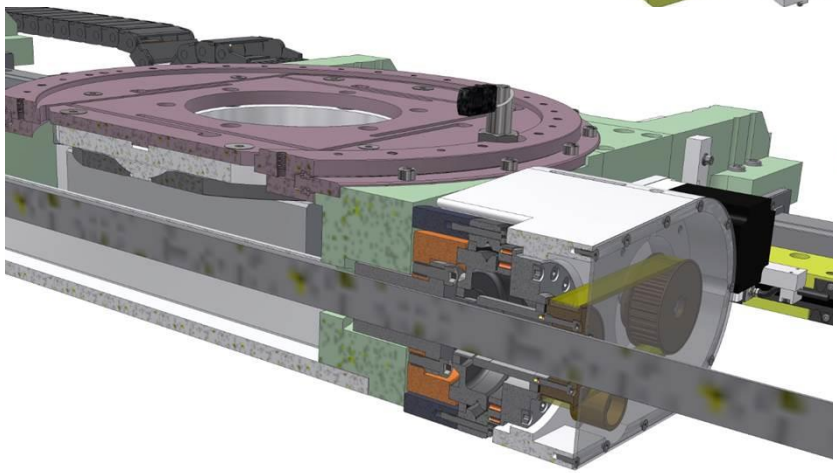
## Conceptual design SESANS

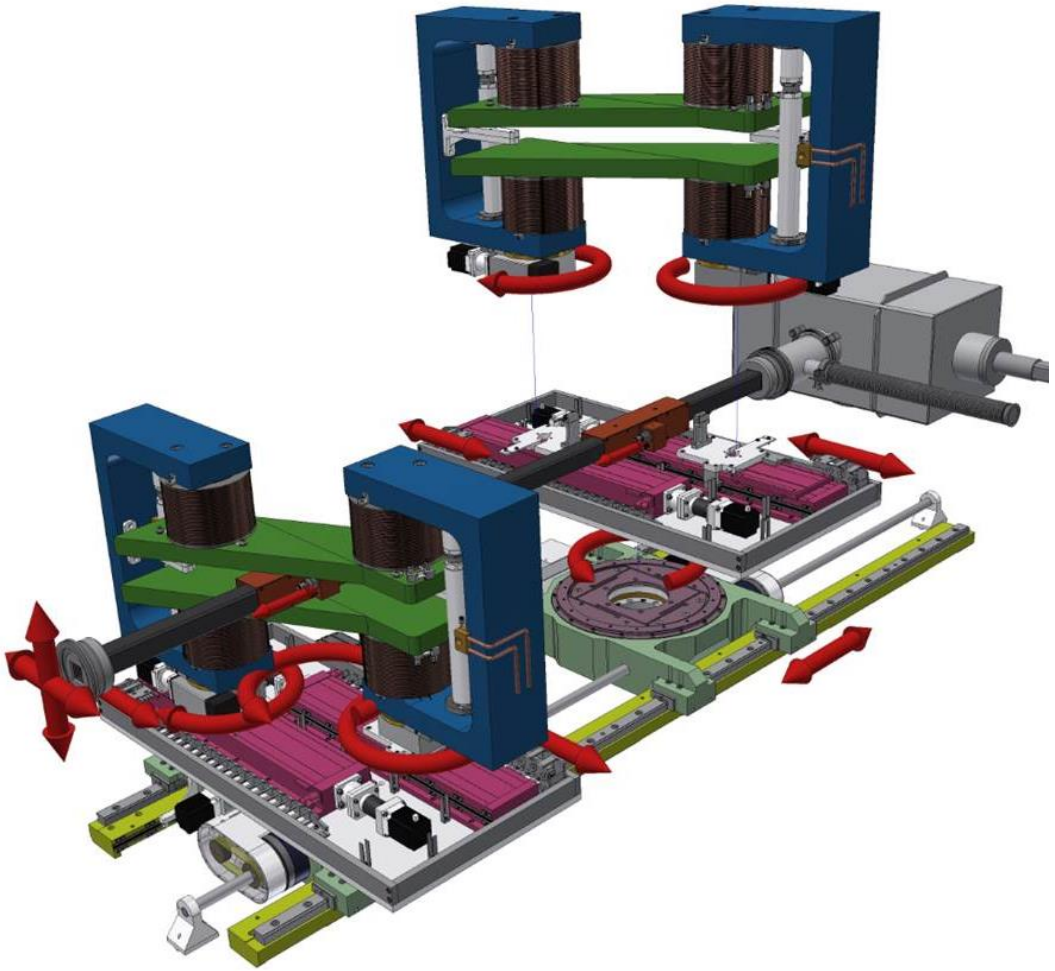


# Delft technical progress

## Conceptual design, review, prototype in production

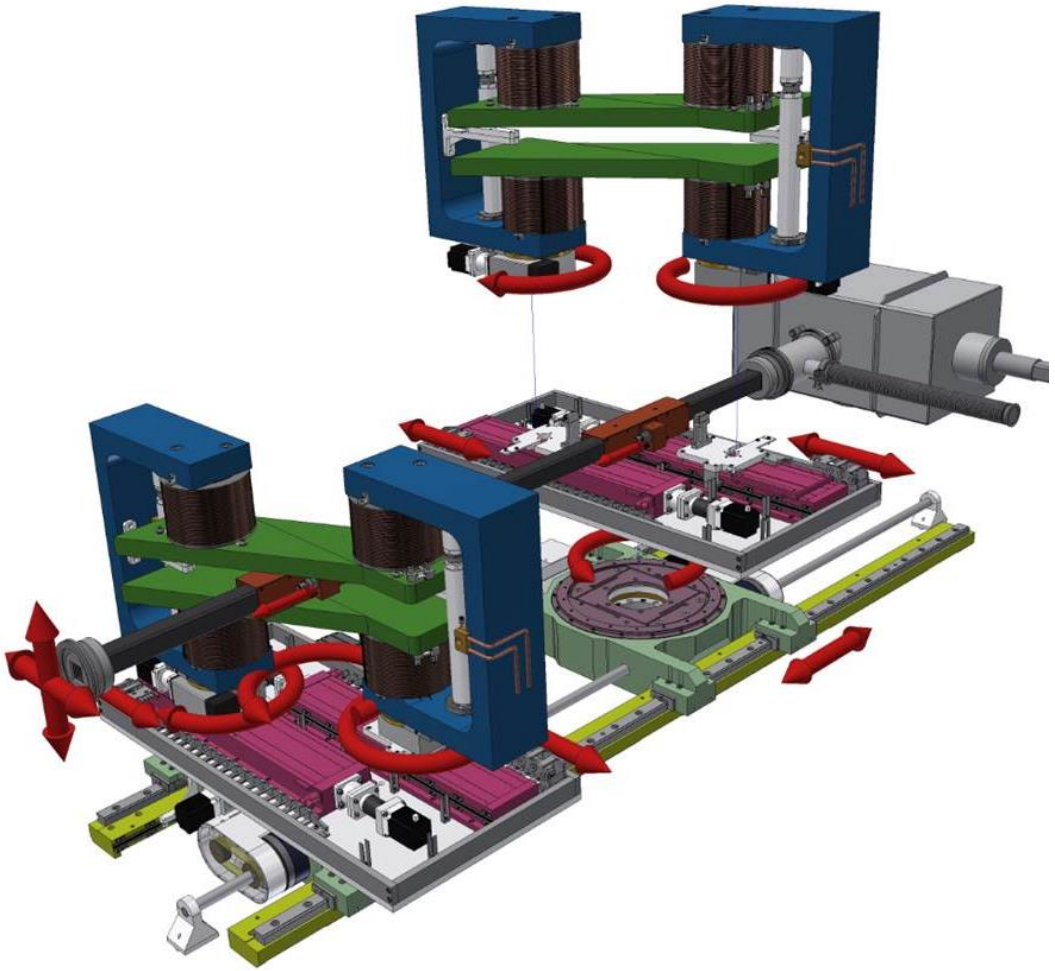




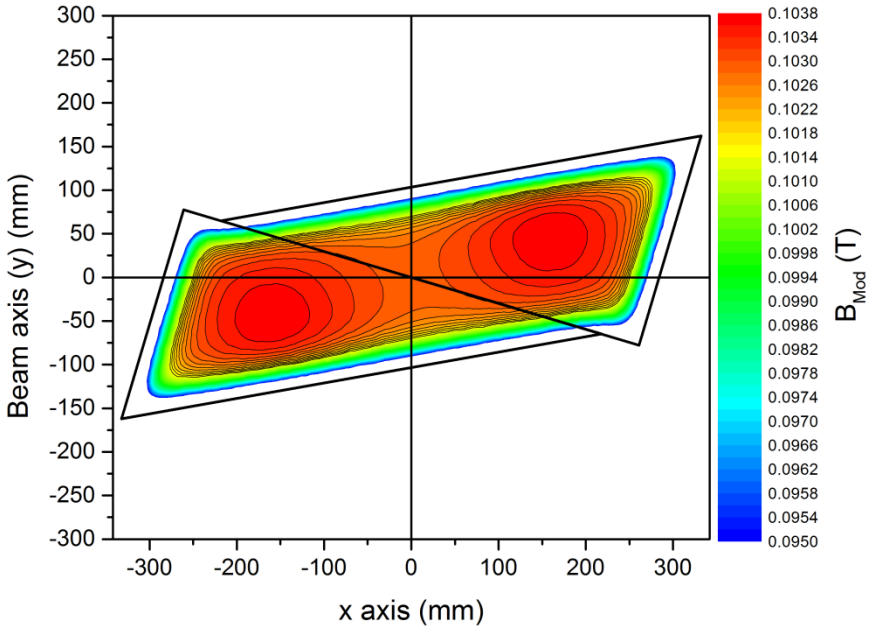


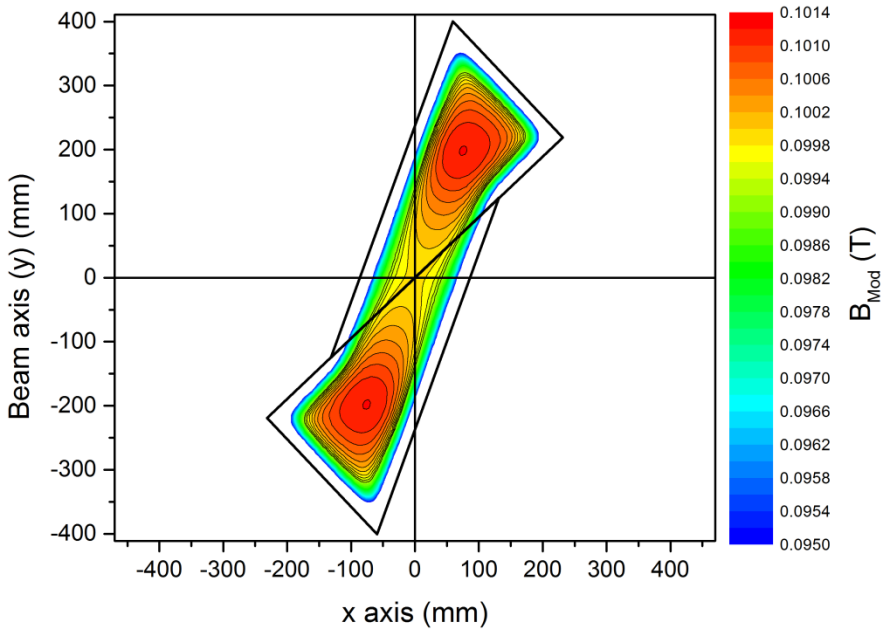
# Delft technical progress

## Conceptual design, review, prototype in production

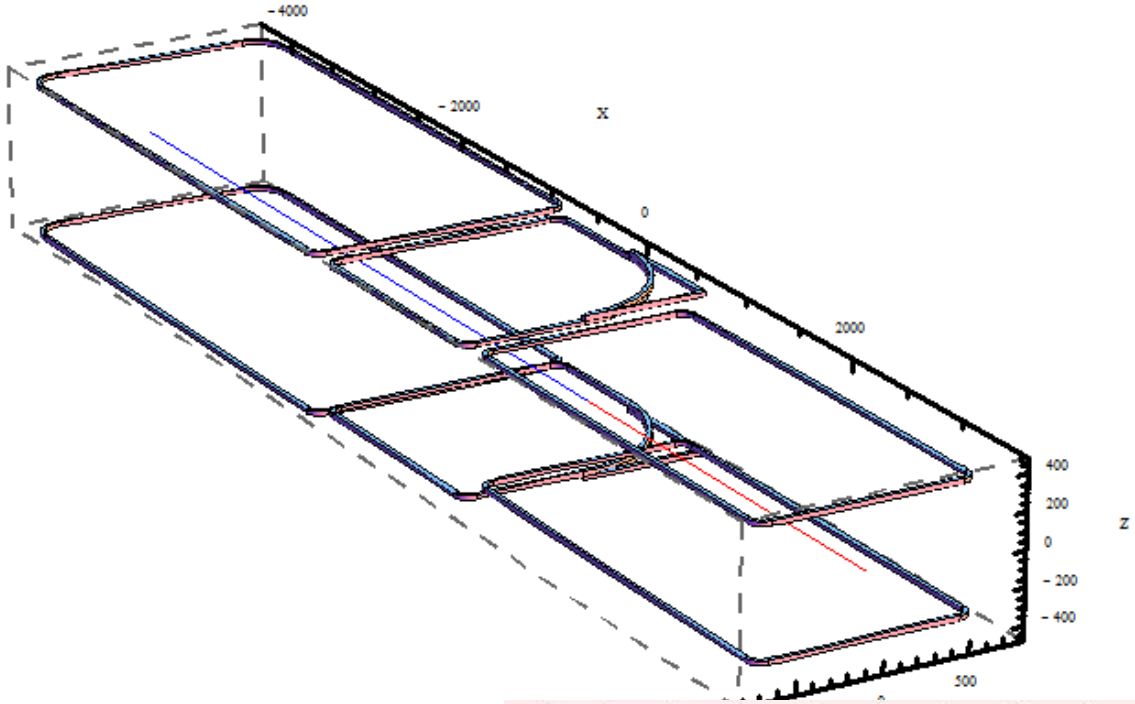


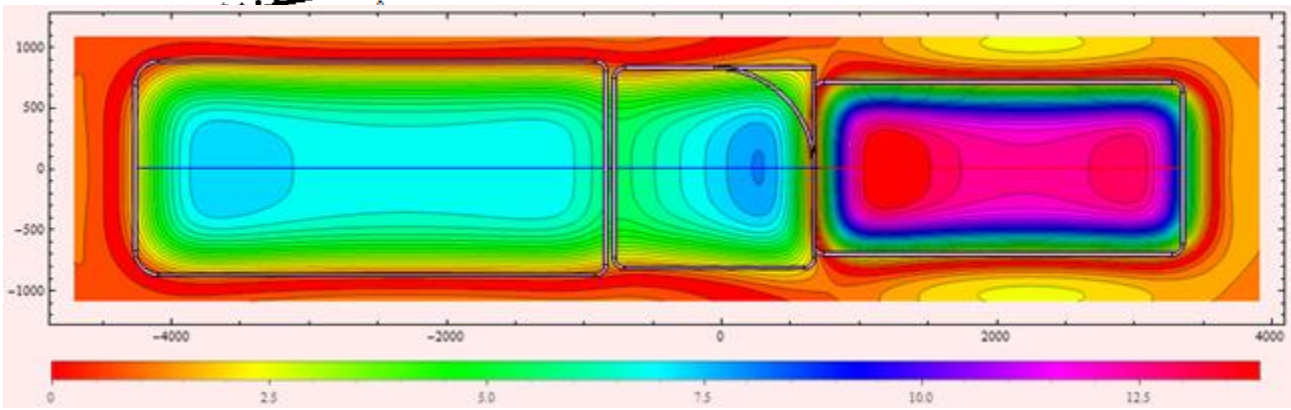
# Delft SESANS progress…



# Delft SESANS progress…



# Delft SESANS progress…

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## Planning:

Prototype of magnet and motion control are in production and expected to be ready in February. We need a decision and point of improvement in March 2015 so we can get the final 4 magnet pairs in production and ready in May 2015. Then we need to "commission" everything without neutrons.

The hope is that summer 2015 the full SESANS assembly can be shipped to ISIS. We should have SESANS running end of 2015…

# Modes to come…

Open discussion…

-Larmor diffraction
-combination normal diffraction and SANS/SESANS
-Spin-Echo, NSE/NRSE?
-TOFLAR?
-MIEZE?

What will give the best scientific output and when?