LhARA Capture

- M King, Strathclyde University - Epoch
  - Laser foil interaction modelling, Prof. P McKenna group – CLF RAL
  - **'Near-100 MeV protons via a laser-driven transparency-enhanced hybrid acceleration scheme'** https://www.nature.com/articles/s41467-018-03063-9.
  - 'Thick foils are hard to model'
  - Agreed to exchange model parameters – cross-checking.
  - Ongoing informal co-operation.

- HT Lau – Smilei
  - Smearing 2D results into 3D to allow beam tracking
  - Cartesian co-ords, results in 'square' distribution
    - Possibly explore cylindrical co-ords with appropriate weighting
  - Challenges relate to normalisation of results to reality
    - 2D sims known to over-estimate particle energy and flux
    - 3D sims restricted by computing resource
    - M King input suggests this is a well known and understood problem with no universally accepted solution
      - everyone else fudges the issue too

T Dascalu   3D plasma lens simulation

- Simulate plasma instability
    - 'New' design of Gabor lens
        - Plasma more unstable than current design
            - Need to add ExB regions to induce plasma rotation to stabilise
            - Explored active options to drive rotation
- Simulate previous designs to understand 'interesting' results.
    - Previous results show array of pencil beams 'split' into array of rings
    - Diagnistic is time integrated
    - Thesis is pencil beams are precessing in time, tracing a ring pattern
    - Some indications from 3D model that a hollow, off centre plasma distribution may be able to reproduce these effects