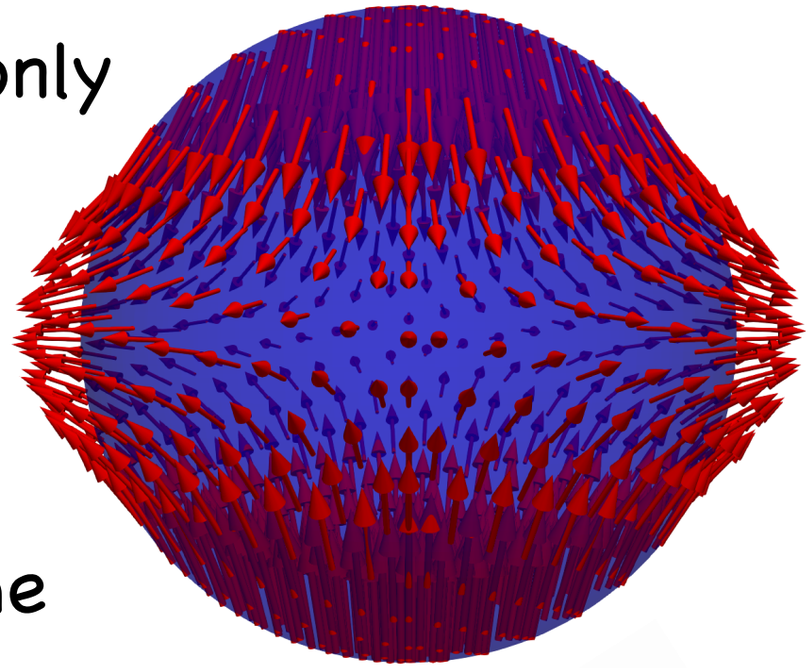
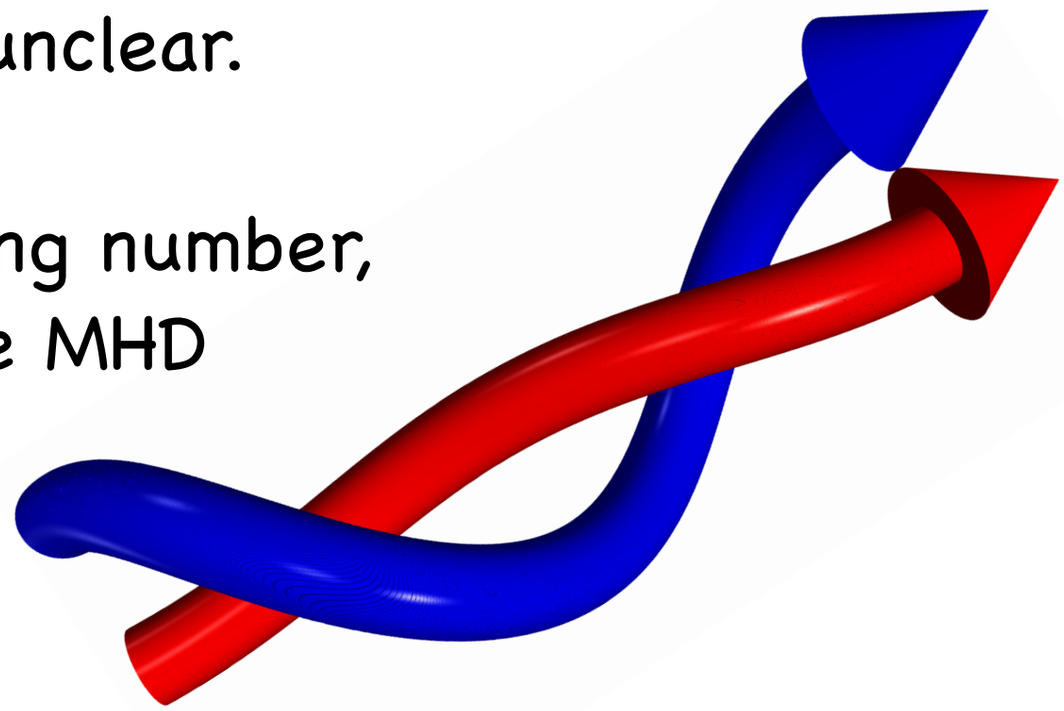
What is Difference and New

1. Previously, the topological degree can be only used in the mapping of M_B: $\mathbf{r} \rightarrow \mathbf{B}(\mathbf{r})/|\mathbf{B}(\mathbf{r})|$ and the analysis of it is limited to the classification of the type of null points.



2. The new one can take the advantage of the field line mapping. The way it changes with time during non-ideal MHD is still unclear.

3. It's a 2D version of the Gauss-linking number, it seems more conserved during the MHD relaxation.

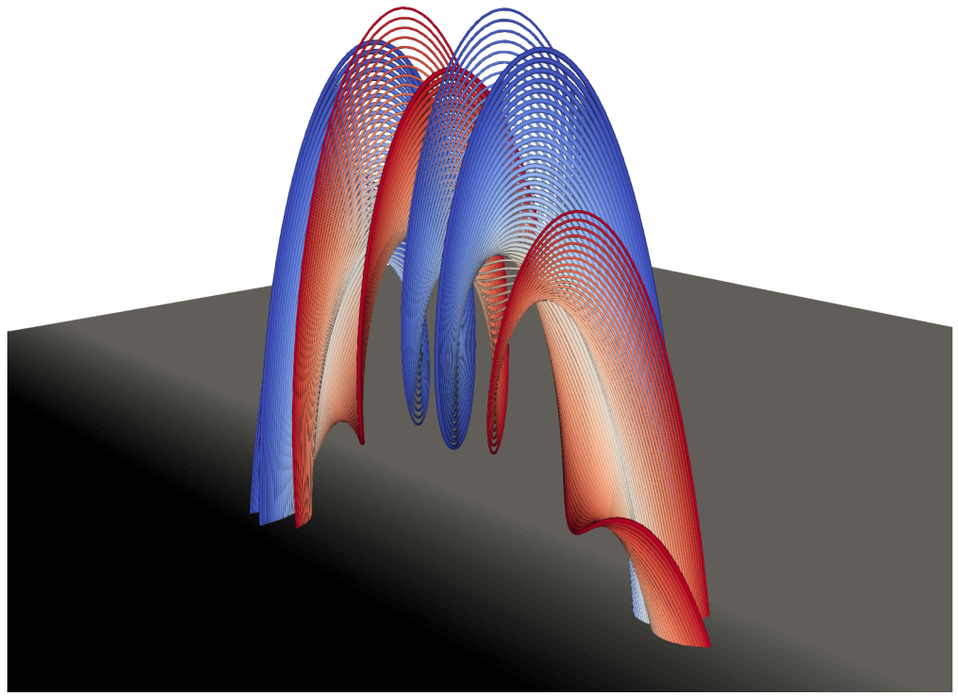


Further Work

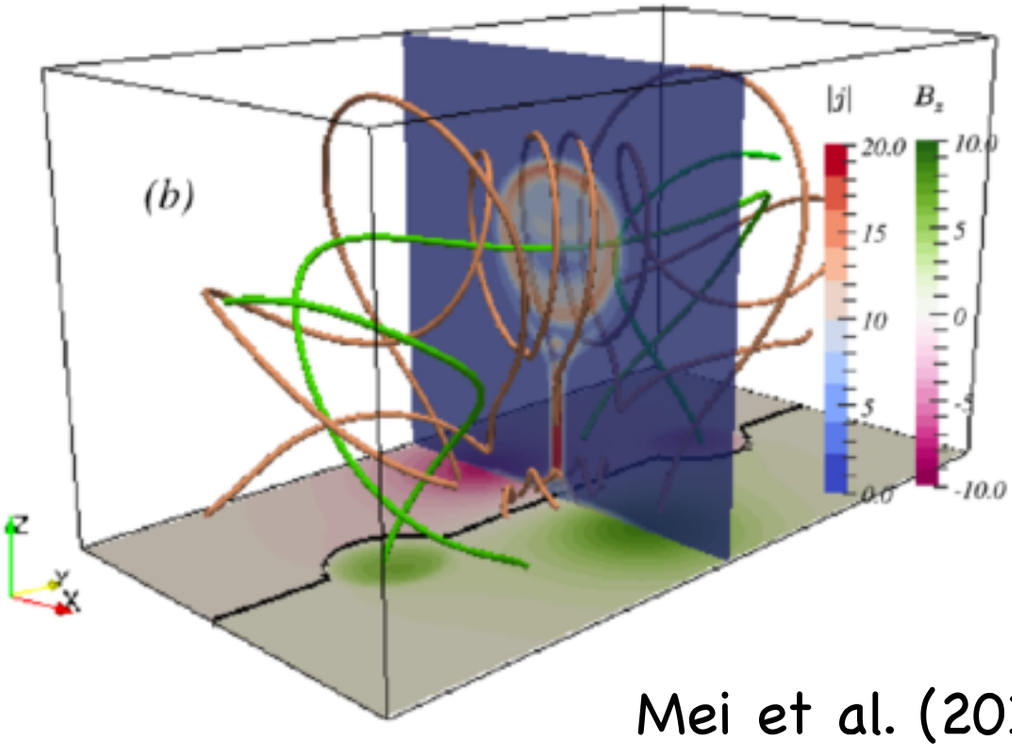
Harder

- Improve the calculation by CGAL+FEniCS.
- Apply the fix-point to the model (both analytical and numerical models).
- Apply it to more observations (with different reconstruction methods).
- Looking for their physical meaning on MHD (stability and constraint on relaxation state).

... ...



Hesse & Schindler (1988)



Mei et al. (2018)