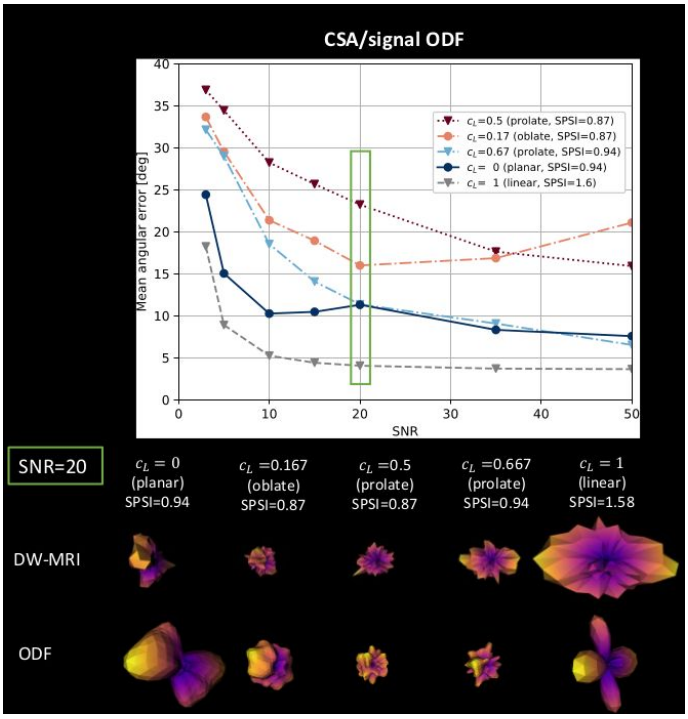
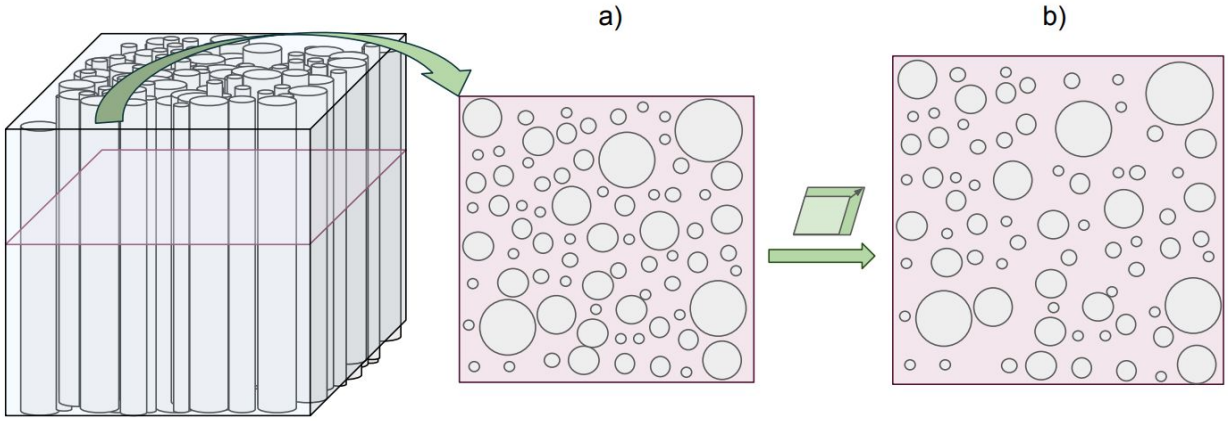
Rensonnet, G., Rafael-Patiño, J., Macq, B., Thiran, J. P., Girard, G., & Pizzolato, M. (2020). A Signal Peak Separation Index for axisymmetric B-tensor encoding. In International Conference on Medical Image Computing and Computer-Assisted Intervention, Workshop on Computational Diffusion MRI (CDMRI), 2020.



This paper presents a theoretical framework to gauge the sensitivity of axisymmetric B-tensors diffusion MRI sequences for white matter fascicle orientations estimation. Theory and simulations confirmed the intuition that linear encoding, because it maximizes B-tensor anisotropy, possesses an intrinsic advantage over all other axisymmetric B-tensors for orientations estimation. However, oblate B-tensors yield higher signal and may be more robust to acquisition noise than their prolate counterparts.

Truffet, R., Rafael-Patino, J., Girard, G., Pizzolato, M., Barillot, C., Thiran, J.P. and Caruyer, E., 2020. An evolutionary framework for microstructure-sensitive generalized diffusion gradient waveforms. In International Conference on Medical Image Computing and Computer-Assisted Intervention (pp. 94-103).



This paper proposes a framework for diffusion MRI generalized gradient waveform design with optimized sensitivity to selected microstructure features. The sensitivity is evaluated by computing a score based on the Fisher information matrix from Monte-Carlo diffusion MRI simulations, which offer greater flexibility and realism than conventional analytical models. The proposed framework can be generalized to optimize the waveforms for any microstructure feature of interest.