Contribution ID: **10** Type: **not specified**

PET Image Reconstruction: from Convex Optimisation to Deep Learning (1)

Thursday, September 12, 2024 11:15 AM (1 hour)

Iterative PET Image Reconstruction, from Convex Optimization to Deep Learning

In this course we will review the principles of tomographic image reconstruction with a focus on Positron Emission Tomography (PET). We will first present the context of nuclear medical imaging, review the basics of ill-posed tomographic inverse problems before introducing the specificities of iterative PET image reconstruction (tomographic reconstruction with Poisson data, specific or generic regularization). Classical iterative reconstruction techniques (Maximum Likelihood, Bayesian reconstruction) will be covered, as well as more recent reconstruction techniques using in particular (deep) learning. The need for robust reconstruction and trustworthy AI in this medical context will also be discussed.

Presenter: Dr SUREAU, Florent (CEA Saclay)