

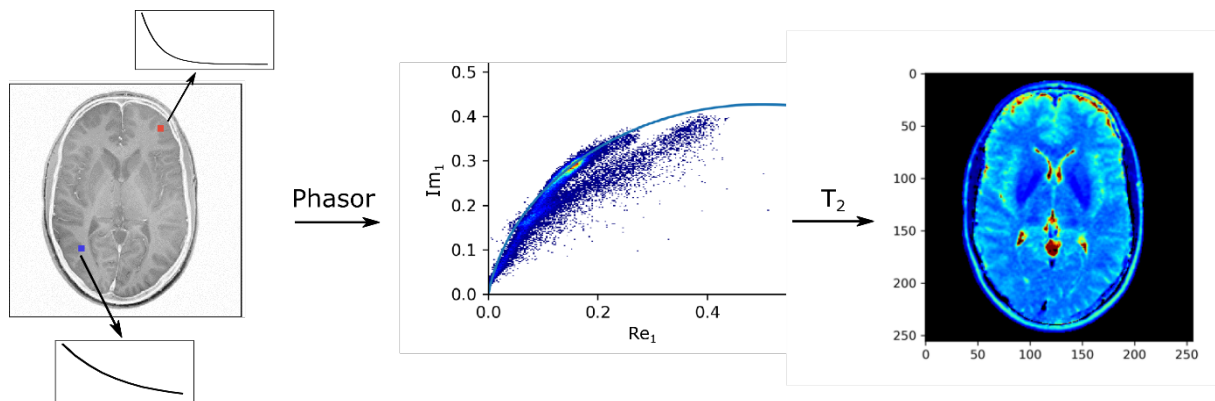
Phasor analysis of qMRI data

Wouter M.J. Franssen, Frank J. Vergeldt, Camilla Terenzi

Laboratory of Biophysics, Wageningen University & Research, Wageningen, The Netherlands.

Magnetic Resonance Imaging (MRI) is used extensively for non-invasive diagnostics in medicine. Over the years, numerous methods have been developed for obtaining high contrast images which are suitable for analysing specific tissues. Recently, more in-depth analyses of the imaging data are being used, where multiple images of the same area are recorded to add information that cannot be obtained from a single image. These methods are known as quantitative MRI (qMRI). Often, these data sets show exponentially decaying signals, which need to be fitted. When these decays are multiexponential, they are hard to analyse, and one has to decide *a priori* on the number of exponentials to be used for fitting.

To circumvent this issue, phasor analysis, a method known for the study of lifetime fluorescence data, has recently been applied for the first time by our group to MRI data¹. In phasor analysis, a plot is made that unravels the characteristics of the decays for all pixels at once. Creating this plot makes no assumptions on the multi-exponential character of the data. Utilizing the similarity between different pixels in an image, trends in the data can be observed and utilized to get a more accurate description of the data.



1. Vergeldt, F. J., Prusova, A., Fereidouni, F., Amerongen, H. V., Van As, H., Scheenen, T. W. J., and Bader, A. N. (2017) Multi-component quantitative magnetic resonance imaging by phasor representation, *Sci Rep* 7, 861.