INTRODUCTION

* What is the problem?
* Why is this interesting?
* What are previous solutions?
* What's the new solution? And when/why is it better than the old ones?
* Give a basic preview of the rest of the paper
* Parkinson’s disease is irreversible, therefore early diagnosis is important.
* An MRI time constant T2\* can be used as an effective biomarker for Parkinson’s disease.
* T2\* is acquired by fitting the exponential decay of the MR image signal at different times.
* Gradient echo T2\* mapping acquires images separately, so will be largely affected by the motion of the subject.
* Multi-echo GRE T2\* mapping allows acquiring data lines for multiple images in one shot which is faster and more motion robust, but SNR can be further improved.
* New method has similar advantages as gold-standard Multi-echo GRE, due to adjacent signal acquisition for multiple images.
* At the same time the signal used to fit the exponential curve in the new method is obtained by summing up information from multiple acquired signals, which gives better effective SNR.
* Model simulation of new method T2\* mapping, followed by performance analysis using phantom data acquired from MRI scan.

The signal used to fit the exponential curve is obtained by summing up selected information from multiple acquired signals, which results in better SNR.

The signal used to fit the exponential curve reconstructed from modulate and adds up of multiple acquired signals, which results in better SNR.

* Iron overload at certain areas in the brain is an effective biomarker for early diagnosis of Parkinson’s Disease.
* Iron overloaded can be detected by T2\*, MRI time