

Exploiting intrinsic high-frequency information of EPI readouts for prospective motion correction with NMR field probes.

Alexander Aranovitch*, Maximilian Haeberlin, Lars Kasper, Klaas P. Pruessmann
*a.aranovitch@gmail.com

We present a variant of the gradient tones concept for real-time motion tracking of NMR field probes. In previous work, field probe localization was achieved by inserting additional gradient tones into spare bands of an imaging sequence. In the case of an EPI sequence, however, both the frequency and phase encoding gradients already contain substantial power at high frequencies that can be exploited for field probe tracking during such a sequence. No compromise in the sequence design is required as this approach relies on intrinsic properties of the EPI readout. It can readily be used for prospective motion correction if combined with an array of head-mounted NMR field probes. Moreover, the field probe array enables concurrent field monitoring for accurate image reconstruction in the presence of field perturbations. We show in vivo results of a motion-corrected time series of a single-shot EPI sequence.