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(54) Title: A METHOD AND SYSTEM FOR RAPID MRI ACQUISITION USING TAILORED SIGNAL EXCITATION MODULES (*RATE*)

(57) Abstract: A system and method for rapid acquisition of MRI data at multiple points in time in an. MRI scan using tailored excitation modules, said method comprising the steps of: obtaining tailored signal excitation modules by using RF excitation pulses in combination with one or more magnetic field gradients; acquiring an aliased k-space dataset at a point in time using a pulse sequence that employs said obtained tailored signal excitation modules, which tag and overlap distinct k-space points; repeating steps (a) and. (b) for acquiring aliased k-space datasets at multiple time points in a scan while tagging the overlapped, k-space points as a function of time to obtain an accelerated k-t dataset; undoing k-space aliasing in the acquired k-space datasets by Fourier transforming them along the time axis followed by a filtering process to separate the overlapped points; and performing a Fourier transformation along one or more axes, of the un-aliased k-space datasets to generate image frames for the different time points at which data was acquired.



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