

Docket #: S09-011

MRI - Method to design adiabatic RF pulses using the Shinnar Le-Roux algorithm

A method for providing an adiabatic RF pulse that is an inversion or refocusing pulse for a RF pulse sequence is provided. A linear phase frequency profile ($F_{\text{sub}}(\omega)$) is determined for the adiabatic RF pulse. A quadratic phase is applied to the linear phase frequency profile for the adiabatic RF pulse to obtain $F(\omega)$, wherein the applying the quadratic phase comprises setting $F(\omega) = F_{\text{sub}}(\omega)e^{i k \omega^2}$. A polynomial β is set to equal a Fourier Transform ($F(\omega)$). A corresponding minimum phase α polynomial is determined for the β polynomial. (α, β) are set as inputs to an inverse Shinnar Le-Roux transform to generate an adiabatic RF waveform. The adiabatic RF waveform is truncated to produce the adiabatic RF pulse, wherein $k > 0.03\pi / (\omega_{\text{sub}5} - \omega_{\text{sub}p}) / (N+1)$ and k

Patents

- Published Application: [20100325185](#)
- Issued: [8,473,536 \(USA\)](#)

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