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.sub.lp(.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.sub.lp(.omega.)e.sup.ik.omega..sup.2. A polynomial .beta. is set to equal a Fourier Transform (F(.omega.)). A corresponding minimum phase .alpha. polynomial is determined for the .beta. polynomial. (.alpha.,.beta.) 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..sub.5-.omega..sub.p)/(N+1) and k

Patents

- Published Application: 20100325185
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