

**Docket #:** S08-012

# **MRI - Optimized spectral spatial pulse design**

A computer implemented method for designing a spectral-spatial pulse for exciting at least one passband and minimally exciting at least one stopband is provided. A uniform shaped spectral envelope is generated. For a plurality of  $k_{\text{sub}z} \neq 0$ ,  $k_{\text{sub}z}$  dependent weights for a spectral envelope that approximate a  $k_{\text{sub}z} = 0$  envelope and provides the at least one passband and the at least one stopband for each of the plurality of  $k_{\text{sub}z} \neq 0$  is generated.

## **Applications**

- This invention describes an optimal spectral spatial design that significantly improves the pass-band and stop band over traditional designs. Using this invention it is possible to design short and effective fat-suppression pulses for 3T and 7T. In addition we show an effective application for hyper-polarized  $^{13}\text{C}$  where only a single metabolite is excited and other metabolites over a wide range of frequencies are completely suppressed.

## **Patents**

- Published Application: [20100102812](#)
- Issued: [8,035,381 \(USA\)](#)

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