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(54) **METHODS FOR MAGNETIC RESONANCE ANALYSIS USING MAGIC ANGLE TECHNIQUE**

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(58) **Field of Classification Search** **600/410, 600/407; 324/307, 309, 314**
See application file for complete search history.

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(57) **ABSTRACT**

Methods of performing a magnetic resonance analysis of a biological object are disclosed that include placing the object in a main magnetic field (that has a static field direction) and in a radio frequency field; rotating the object at a frequency of less than about 100 Hz around an axis positioned at an angle of about 54°44' relative to the main magnetic static field direction; pulsing the radio frequency to provide a sequence that includes a phase-corrected magic angle turning pulse segment; and collecting data generated by the pulsed radio frequency. In particular embodiments the method includes pulsing the radio frequency to provide at least two of a spatially selective read pulse, a spatially selective phase pulse, and a spatially selective storage pulse. Further disclosed methods provide pulse sequences that provide extended imaging capabilities, such as chemical shift imaging or multiple-voxel data acquisition.

29 Claims, 27 Drawing Sheets

