Title:	Dynamic Spin: A Virtual Spectrometer for Understanding and Designing NMR Experiments
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Abstract:	In this thesis, an analytic description of multi-quantum (MQ) phenomenon involving quadrupolar nuclei is discussed. Employing the concept of effective radio-frequency (RF) Hamiltonians, a new pulse scheme is proposed for exciting MQ transitions in spin I=1 and 3/2 systems. In contrast to existing pulse schemes in the literature, the proposed optimum frequency switched consecutive (o-FSC) pulse scheme, facilitates the creation of MQ coherences at shorter time scales with lesser dependence on MQ relaxation rates. Additionally, to improve our understanding of the underlying spin dynamics, a numerical simulation program (DYNAMIC SPIN (DS)) based on the spherical tensor formalism was developed and is described in the second half of the thesis.
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