

## **Internal Seminar**

### **Description of Radio-Frequency (RF) pulses in Quadrupolar nuclei**

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Employing the concept of effective Hamiltonians, an analytic theory is introduced to describe transitions in a multi-level system in nuclear magnetic resonance (NMR) spectroscopy. Specifically, the discussion is centered towards the treatment of selective and non-selective excitations in static single-crystal and magic angle spinning (MAS) powder sample in quadrupolar spin ( $I > 1/2$ ) systems. Employing the spherical tensor formalism, effective radio-frequency (RF) Hamiltonians are proposed for describing transitions in  $I=1, 3/2$  and  $5/2$ . The optimum conditions desired for selective excitation in a multilevel system are derived pedagogically from first principles and presented through analytic expressions. As an extension of this approach, multi-quantum (MQ) excitation in quadrupolar systems is discussed.

***Wednesday, Apr 20<sup>th</sup> 2016***

***2:00 PM (Tea/Coffee at 1:45 PM)***

***Seminar Hall, TCIS***