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## **Advanced imaging and spectroscopy techniques for body magnetic resonance**

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# STELLINGEN

Behorende bij het proefschrift van Paul de Heer

## ADVANCED IMAGING AND SPECTROSCOPY TECHNIQUES FOR BODY MAGNETIC RESONANCE

1. Without backing from MR vendors, spectroscopy will remain a niche MR technique. (this thesis)
2. Between cardiac, liver and renal spectroscopy the latter is the most challenging to perform. (this thesis)
3. When designing dielectric pads the conductivity should be kept as low as possible or else the potential benefits are negated. (this thesis)
4. High dielectric pads can improve image and spectral quality however, competence regarding their use is required. (this thesis)
5. Image shading and uneven contrast resulting from spatial variation in the transmit B1+ field remains one of the biggest unsolved problems for routine clinical 3 T imaging today. (Bernstein MA, Huston J, III, Ward HA. Imaging artifacts at 3.0T. J Magn Reson Imaging 2006;24:735-746)
6. Elaborate interference patterns can appear in high permittivity materials, due to the inverse relationship between permittivity and wavelength, if conductivity is negligible. (Adapted from: Vaidya MV et al. Concepts Magn Reson Part B Magn Reson Eng. 2016 Feb;46(1))
7. While most recent studies in humans have evaluated triglyceride content in various tissues indirectly by <sup>1</sup>H magnetic resonance spectroscopy (MRS), direct biochemical quantitation of triglycerides, remains the gold-standard. (Bobulescu IA et al. PLoS ONE 9(8))
8. One of the essential elements of an in vivo magnetic resonance (MR) spectroscopy (MRS) examination is the processing of the raw time domain data to quantities that can be digested in further clinical evaluation or in biochemical, physiological or morphological interpretations. (in 't Zandt H et al. NMR Biomed. 2001 Jun;14(4))
9. What is important is seldom urgent and what is urgent is seldom important. So spend your time on the important non-urgent matters. (adapted from: Dwight D. Eisenhower, 1954)
10. In theory, there is no difference between theory and practice. (adapted from: Jan L. A. van de Snepscheut, 1984)
11. Trust me, I am an engineer. Our methods can be unconventional but it works. (adapted from: Igor Pachmelnik Zakuskov, 2012)