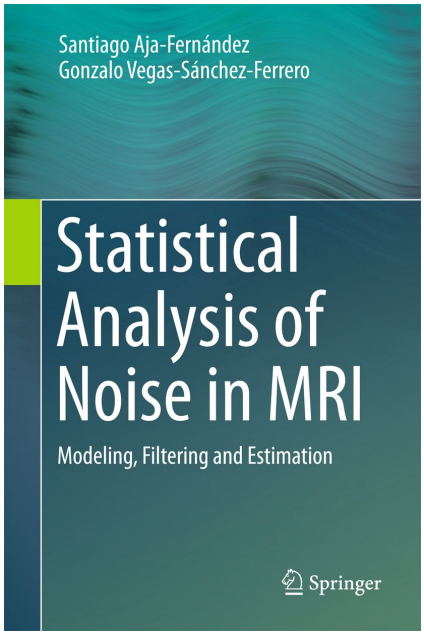

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S. **Aja-Fernández**, G. **Vegas-Sánchez-Ferrero**

Statistical Analysis of Noise in MRI

Modeling, Filtering and Estimation

- **Provides comprehensive coverage of the field within a single, unified framework**
- **Presents a unique overview of the various techniques for noise estimation, explaining which method is best applied for different scanners and types of data**
- **Includes practical solutions for noise problems that can be directly implemented in MRI-related software**

This unique text/reference presents a comprehensive review of methods for modeling signal and noise in magnetic resonance imaging (MRI), providing a systematic study, classifying and comparing the numerous and varied estimation and filtering techniques drawn from more than ten years of research in this area.

Topics and features:

- Provides a complete framework for the modeling and analysis of noise in MRI, considering different modalities and acquisition techniques
- Describes noise and signal estimation for MRI from a statistical signal processing perspective
- Surveys the different methods to remove noise in MRI acquisitions, under different approaches and from a practical point of view
- Reviews different techniques for estimating noise from MRI data in single- and multiple-coil systems for fully sampled acquisitions
- Examines the issue of noise estimation when accelerated acquisitions are considered, and parallel imaging methods are used to reconstruct the signal
- Includes appendices covering probability density functions, combinations of random variables used to derive estimators, and useful MRI datasets

This practically-focused work serves as a reference manual for researchers dealing with signal processing in MRI acquisitions, and is also suitable as a textbook for postgraduate students in engineering with an interest in medical image processing.

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