



1st ed. 2016, XXI, 327 p. 172 illus., 99 illus. in color.

 **Printed book****Hardcover**

- ▶ 109,99 € | £82.00 | \$129.00
- ▶ \*117,69 € (D) | 120,99 € (A) | CHF 121.00

 **eBook****Available from your library or**

- ▶ [springer.com/shop](http://springer.com/shop)

 **MyCopy****Printed eBook for just**

- ▶ € | \$ 24.99
- ▶ [springer.com/mycopy](http://springer.com/mycopy)

**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.

**Dr. Santiago Aja-Fernández** is an Associate Professor at the School of Telecommunications of the University of Valladolid, Spain. His other publications include the Springer title *Tensors in Image Processing and Computer Vision*. **Dr. Gonzalo Vegas-Sánchez-Ferrero** is a Research Fellow at Brigham and Women's Hospital, and in the Applied Chest Imaging Laboratory of Harvard Medical School, Boston, MA, USA.

Order online at [springer.com](http://springer.com) ▶ or for the Americas call (toll free) 1-800-SPRINGER ▶ or email us at: [customerservice@springer.com](mailto:customerservice@springer.com). ▶ For outside the Americas call +49 (0) 6221-345-4301 ▶ or email us at: [customerservice@springer.com](mailto:customerservice@springer.com).

The first € price and the £ and \$ price are net prices, subject to local VAT. Prices indicated with \* include VAT for books; the €(D) includes 7% for Germany, the €(A) includes 10% for Austria. Prices indicated with \*\* include VAT for electronic products; 19% for Germany, 20% for Austria. All prices exclusive of carriage charges. Prices and other details are subject to change without notice. All errors and omissions excepted.

