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# PROCEEDINGS OF SPIE

## *Wavelets and Sparsity XIV*

**Manos Papadakis**  
**Dimitri Van De Ville**  
**Vivek K. Goyal**  
*Editors*

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# Introduction

Wavelets and Sparsity XIV is the latest in a series of conferences launched in 1993 in the then annual meeting of the SPIE (Society of Photographic Instrumentation Engineers). This series is one of the two oldest conference venues on atomic representations of signals and images of which SPIE has been a kind and hospitable host. The key feature of these decompositions is the combination of sparsity in the transform domain with the ability to capture local features in the spatial domain. In the eighteen years since this series was initiated, numerous theoretical and algorithmic contributions have been made in the field of signal and image analysis that have been highlighted in this conference. Initially the focus was on the design of wavelets filters. Recently, as the name of the conference indicates, the community and so our conference focuses more on the theory of sparse representations as a whole and not strictly from the viewpoint of wavelets. New areas of theoretical study have emerged or re-emerged, such as compressive sensing, fusion frames, and directional transforms, while their applications appear to open new perspectives in areas such as MR imaging, computer visualization, face recognition, cellular communications, dictionary-based machine learning and many others.

The present volume reflects the work presented in Wavelets and Sparsity XIV along the lines described above. This volume is a testament on how the domain of sparse representations is an exciting and dynamic one. We hope that the interested reader will find it to be a valuable reference source. Last but not least, we thank all the contributors of this volume, the invited speakers and presenters of Wavelets and Sparsity XIV, the special sessions organizers, Mrs. Darcey Maher Peterson who oversaw the editing of this volume and Ms. Megan Artz who helped with the organization of our meeting. Please visit us at [www.waveletseries.org](http://www.waveletseries.org) to stay tuned.

**Manos Papadakis**  
**Dimitri Van De Ville**  
**Vivek Goyal**

