



University of Pavia

Ph.D. School of Electrical and Electronics Engineering and Computer Science

# SHORT COURSE

## Multidimensional inverse problems in processing of hyperspectral Earth observation datasets

**Prof. José Manuel Bioucas Dias**  
Instituto Superior Técnico, Lisbon (Portugal)

<b>Date</b>	<b>Thu 14<sup>th</sup> Dec 2017</b>	<b>Mon 18</b>	<b>Mon 18</b>	<b>Tue 19</b>	<b>Wed 20</b>	<b>Thu 21</b>
<b>Time (24h)</b>	<b>9-11</b>	<b>9-11</b>	<b>14-16</b>	<b>11-13</b>	<b>14-16</b>	<b>9-11</b>
<b>Room</b>	<b>Seminar room, electronics – floor D</b>	<b>C7</b>	<b>C6</b>	<b>F2</b>	<b>Seminar room, electronics – floor D</b>	<b>Seminar room, electronics – floor D</b>

Polo Didattico Ingegneria

Università degli Studi di Pavia – Via Ferrata, 5 – Pavia

**Abstract:** The course gives a unified perspective of disparate multidimensional inverse problems appearing in physics and engineering with a particular focus on hyperspectral imaging. Relevant concepts integrating this unified perspective are the data observation mechanism, the conditioning characteristic of the inverse problem (ill/bad/well-posed), the *a priori* information expressed by the regularizer (prior in Bayesian terms), the inference criterion, and the estimation algorithm. On successful completion of this course, students are expected to understand the basic theory of multidimensional ill-posed problems with a particular focus on those appearing in hyperspectral imaging. PhD students attending the course will be recognized more credits than a seminar series if undertaking the final test.

**Bio:** José Bioucas-Dias received the EE, MSc, PhD, and Habilitation (“Agregado”) degrees in electrical and computer engineering from Instituto Superior Técnico (IST), Universidade Técnica de Lisboa (now Universidade de Lisboa), Portugal, in 1985, 1991, 1995, and 2007, respectively. Since 1995, Dr. José Bioucas-Dias has been with the Department of Electrical and Computer Engineering, IST, where he was an Assistant Professor from 1995 to 2007 and an Associate Professor since 2007. Since 1993, he is also a Senior Researcher with the Pattern and Image Analysis group of the Instituto de Telecomunicações, which is a private non-profit research institution. His research interests include inverse problems, signal and image processing, pattern recognition, optimization, and remote sensing. Dr. Bioucas-Dias has authored or co-authored more than 300 scientific publications including more than 90 journal papers and 210 peer-reviewed international conference papers and book chapters. He is an IEEE Fellow, is included in Thomson Reuters' Highly Cited Researchers 2015 list, and received the IEEE-GRSS David Landgrebe Award for 2017.

**Organizer**

Prof. Fabio Dell’Acqua

**Ph.D. Coordinator**

Prof. P. Di Barba