

## When disorder is just right: A lecture on complexity-driven photonics

by

Prof. Andrea Fratalocchi

King Abdullah University of Science and Technology

Date: 31 March 2014, Monday  
Time: 2.00pm to 3.00pm  
Venue: Hilbert Space (SPMS-PAP 02-02)  
Host: Asst. Prof. Cesare Soci



### **Abstract**

Disorder and chaos are ubiquitous expressions of nature that are mostly unwanted in applications, as they introduce unpredictability and make difficult to explain experimental results. On the contrary, if properly understood, they can be the basis on a completely new technology that is sustainable, scalable and extremely cheap.

In this talk I will summarize my research in this field, discussing about the recent results of my group in the field of chaotic energy harvesting, light condensation effects and ultrafast subwavelength rogue waves.

### **Short Biography**

Andrea Fratalocchi is an Assistant Professor in the Computer, Electrical and Mathematical Sciences and Engineering Division. He joined KAUST in January 2011.

Prior to joining KAUST, Dr. Fratalocchi was a KAUST Research Fellow, working at Sapienza University in Rome under the KAUST Fellowship Award. From 2007 to 2009, Dr. Fratalocchi worked as a post-doctoral researcher at Sapienza University in Rome under a grant from the research center “Enrico Fermi”.

Since joining Kaust, Dr. Fratalocchi published several articles in high impact-factor journals including Physical Review Letter and Nature Publishing Group journals. Dr. Fratalocchi’s latest work featured the cover of the June 2013 issue of Nature Photonics, where he discusses a new technology able to harvest energy from chaos, with large implications in the field of renewable energy.

In 2012, Dr. Fratalocchi was appointed as Editor of Nature Scientific Report, the newest journal of Nature Publishing Group. To date, Andrea Fratalocchi has authored more than 80 research articles, which resulted in more than 1000 citations.