

**Title:** Secure and energy efficient distributed source coding for sensor networks

**Description:** Bilateral project between France and Serbia, program "Pavle Savić - Partenariat Hubert Curien"

**Dates:** January 2018 - December 2019

**Project number:** 451-03-01963/2017-09/04

**Partner institutions:**

- IMT Atlantique (ex Telecom Bretagne), Brest, France
- Mathematical Institute of the Serbian Academy of Sciences and Arts, Belgrade, Serbia

**French team:**

- Elsa Dupraz, Principal Investigator (<http://elsa-dupraz.fr/>)
- Fangping Ye

**Serbian team:**

- Velimir Ilić, Principal Investigator
- Miodrag Mihaljević (<http://www.mi.sanu.ac.rs/cv/cvmihaljevic.htm>)

**Project goals:**

In this collaboration, we plan to develop an efficient practical distributed source coding (DSC) scheme for the reduction of energy consumption in sensor networks that will be designed jointly with a method for high quality encryption. The originality of our approach resides in the fact that unlike previous works (i) sensors energy consumption will be explicitly taken into account in our analysis, (ii) compression and encryption systems will be jointly designed through the usage of error-correcting codes, which will be coupled with memory and energy efficient decoders. In addition, we will develop new methods for the performance analysis of the schemes under energy constraints, based on advanced information theory models. The obtained results will be theoretically and numerically verified. The projected schemes for sensor networks are expected to provide a high performance energy efficient and secure tool for biomedical health monitoring, hazardous environment exploration, real-time area video surveillance and energy harvesting.