

## **Proposal for a satellite symposium at NANOISRAEL 2020**

### **Parallel information processing at the nanoscale**

#### **Abstract**

Coherent optical parallel computing is built on coherent information transfer by ultrafast laser addressing of engineered quantum dots, nanostructured materials and molecules. The symposium will address ground-breaking nonlinear coherent spectroscopic and electrical approaches for parallel processing of large amounts of information at the classical and quantum levels. The satellite session will investigate foundational experimental, theoretical and algorithmic innovations and new technological paradigms for ultrafast parallel multi-valued information processing.

The targeted outcome is identifying new avenues for developing devices for parallel logic engineered to industry standards and with suitable software.

The satellite symposium is multidisciplinary, starting from nano devices to developing software.

#### **Proposed sessions**

1. Nanomaterials and devices for coherent coupling
2. Probing coherences at room temperature
3. Modeling for parallel computing
4. Exploiting coherence in software

#### **Targeted audience**

The COPAC (Coherent Optical Parallel Computing FET H2020 project) gathers nanomaterial and devices , modeling and theory, ultrafast optical spectroscopy and computer scientists, with an advisory board of international experts in these fields (25 scientists from abroad : Europe, US, Japan and 20 from Israel).

The sessions are open and target a broad audience. For example, the quantum information center at HUJI expressed its interest in taking part in organizing the sessions.