

The 630<sup>th</sup>

# MANA Seminar



## Evolving functionality in disordered nanomaterial networks

Chair: Dr. Kazuya TERABE (MANA PI)

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We have experimentally demonstrated that a designless network of gold nanoparticles – acting as single-electron transistors at low temperature – exhibits strongly non-linear behavior, which can be evolved into computational functionality. We have realized two-input-one-output Boolean logic gates and a half-bit adder in this system. The viability of our approach is underlined by simulations based on both physical and neural-network models. Recent experimental results show that the above principle is generic, and can be demonstrated in other material systems as well, also at much higher temperatures.

The present challenge is to realize more advanced functionality, preferably at higher temperature. We propose reservoir computing as a suitable framework, where not only nonlinearity but also (fading) memory is a crucial ingredient.

**Venue: Auditorium, 1F, WPI-MANA Bldg., Namiki-site**

**Date: August 7th, Tuesday Time: 10:00 – 11:00**

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