Tel Aviv University , Physics Colloquium

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Melamed Lecture Hall

Free expressions of the human brain

Mapping the functional properties of human visual cortical areas has traditionally followed a stimulus-response paradigm whereby a selected set of stimuli is presented under highly controlled experimental conditions. This approach has led to a remarkable success in delineated functionally selective cortical regions. However attempting to exert such tight external control inherently bears a disruptive impact on the free expression of internally-driven biases and processes which play a critical role in visual perception as well as in cognition in general. Here I will review a number of studies from our group- in which we attempted to study the human brain under free and spontaneous conditions. Such paradigms include using naturalistic movies as stimuli and following neuronal activity during spontaneous free recall. At the extreme end of such attempts is the complete dissociation of brain mapping from any stimulus or task- during spontaneous activity and sleep. Our results show that removing external controls actually allows human neuro-cognitive traits to be robustly expressed and can be studied in a consistent and detailed manner both in health and disease.