Contribution ID: **4** Type: **Oral**

Axions, Relaxions, and Novel Dark Matter Substructure

Monday 3 June 2019 15:40 (20 minutes)

Light ($m <$ eV) scalar particles, notably axions and relaxions, make interesting dark matter (DM) candidates, not least because they modify substructure within galaxies. Due to high occupation numbers typical of such candidates, it well known that clumps of scalar field known as boson stars can form, supported by a balance of self-gravity against gradient energy. I will briefly review recent work regarding the formation and stability of such configurations, and the consequences for terrestrial experiments looking for transient signals. Then, I will propose that a boson star-like 'halo'can surround the Earth or Sun, supported by these external gravitational sources, enhancing the local DM density and modifying experimental sensitivities. I will discuss current constraints on Earth-based and Solar-based halos from gravitational measurements, as well as current and future detection capabilities for scalar field DM.

Primary author: Dr EBY, Joshua (Weizmann Institute of Science)

Presenter: Dr EBY, Joshua (Weizmann Institute of Science)

Session Classification: Afternoon 11