

## March Meeting 2023 Featured Presentations

### Animals

#### [Static Electricity Helps Jumping Nematodes Reach Prey](#)

March 6, 11:30 a.m. PST, Room 131

Jumping nematodes launch their millimeter-sized bodies into the air to attack insect prey. But they don't accomplish this distinct hunting tactic solely because of their athletic ability. Instead, the jumping parasites reach their electrically charged prey by harnessing electrostatic forces and wind-assisted dispersal, as Victor Ortega-Jimenez and colleagues will explain. By manipulating flow current and other variables in a lab setup, the researchers explored how the nematode species *Steinerinema carpocapsae* uses electrostatic forces to gain a mid-air assist. The work has implications for conceptualizing the physical forces acting on ecological interaction dynamics at the milli-scale.

#### [How a Longhorn Beetle Gets Its Color](#)

March 7, 1:06 p.m. PST, Room 129

Many species of longhorn beetles sport vivid colors in complex patterns made up of colored scales. These colors come from both pigments and the ordered or disordered arrangements within photonic crystals — nanostructures with certain light-refracting properties — contained in the scales. In this talk, Viola Bauernfeind and colleagues will present how they identified the specific structures of photonic crystals in the green stripes and blue feet of a longhorn beetle species known as *Sternotomis virescens*. They will also explain how these structures lead to the beetle's non-iridescence — colors that don't change no matter the viewing angle.

#### [Non-Invasively Studying Infant Ants and Other Insects Underground](#)

March 9, 9:24 a.m. PST, Room 206

Researchers are interested in understanding the collective behaviors of social insects like ants and termites. But these insects spend much of their lives underground, making it challenging

to monitor their behaviors. In this talk, Hosain Bagheri and colleagues will describe how a laser spectroscopy technique previously used for studying the behavior of granular media could be used to non-invasively study the movements of underground insects. They demonstrated the technique in detecting ants in multiple developmental stages, showing that they could study the frequency, length and intensity of the insects' movements.

### **Fluid Dynamics Can Explain Why Dogs Are Constantly Sniffing the Ground and Air**

March 9, 12:30 p.m. PST, Room 203

As many dog owners know, canines love to sniff the ground and occasionally pause to sniff the air. Intriguingly, researchers have also observed that behavior in rats. In this talk, Nicola Rigolli and colleagues will display a [fluid dynamics-based strategy](#) for understanding why both dogs and rodents exhibit these alternating sniffing patterns. The group created [simulations](#) of agents interacting with irregular odor transport plumes. To minimize time spent looking for the odor source (target, food ...), the modeled agents evolved an optimized searching strategy that led them to alternate between sampling airborne and ground odor flows. Moving forward, the researchers hope to see studies in animals to test whether this explanation of alternation-based olfactory search holds true in the real world.