

From: Inform
Subject: EM: Keck Science Seminar : Friday 04/12

From: Soto, Lauran

KECK SCIENCE SEMINAR ANNOUNCEMENT

Please join us for the last Keck Science Seminar of the Spring 2024 Term

Odd Dynamics of Living Chiral Crystals

Tzer Han Tan
Assistant Professor of Physics
University of California, San Diego

Friday, April 12, 2024
Burns Lecture Hall
12:15 - 1:15 PM

Abstract: Active crystals, emerging from the self-organization of motile objects, have been extensively studied in synthetic and bacterial active matter. Whether persistent crystalline order can arise in autonomously developing multicellular organisms remains unknown. In this talk, I will share our recent discovery on how swimming starfish embryos spontaneously assemble into chiral crystals that span thousands of spinning organisms and persist for tens of hours. Combining experiments, theory and simulations, we demonstrate that the formation, dynamics and dissolution of these living crystals are controlled by the hydrodynamic properties and the natural development of embryos. Remarkably, living chiral crystals exhibit self-sustained chiral oscillations reminiscent of dynamics predicted recently for odd elastic materials. Our results provide direct experimental evidence for how non-reciprocal interactions between autonomous multicellular components may facilitate non-equilibrium phases of chiral active matter. Further experiments on other marine embryos reveal similar dynamics, hinting at possible evolutionarily conserved mechanisms that underlie chiral symmetry breaking and collective dynamics in diverse species of spinning marine larvae.

Find additional seminar information here: <https://www.kecksci.claremont.edu/seminars/>

Best,

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