

# PHYSICS

UNIVERSITY OF MICHIGAN

PRESENTS

## Today's Saturday Morning Physics Speaker



### Ryan Hubbard

Graduate Student  
(U-M Biomechanical  
Engineering and  
Applied Physics)

### Histotripsy: Crushing Cancer Cells with Acoustic Cavitation

#### Abstract

Histotripsy is a non-invasive cancer-treatment approach that uses focused beams of ultrasound. In this presentation, Ryan will highlight the results of his research, illustrating histotripsy's ability to destroy tumor cells and elicit anti-tumor immune responses. He will describe the basics behind ultrasonic pulse generation, acoustic cavitation, and how the mechanism of histotripsy compares to other external beam treatments such as X-ray irradiation.

#### Biography

Ryan Hubbard is currently a 4th year Ph.D. student in the Applied Physics program at the University of Michigan. He is a member of both the Histotripsy Group within the Department of Biomedical Engineering and the Cho Immunology Lab within the Department of Surgery. His research focuses on the MR-guided histotripsy, transducer fabrication and the antitumor immunostimulatory effects of histotripsy ablation.

Ryan received his B.S. in Physics at Howard University and has previously conducted research in a wide variety of fields including astronomy and accelerator physics. Ryan is very passionate about science outreach and enjoys participating in the annual UM WISE-GISE summer camp.

Ryan has spent his quarantine indulging in several new hobbies including drone flying, skateboarding and PC building.

**YouTube Link to Saturday's Talk:** <https://www.youtube.com/watch?v=oBmpwVeulpq>

**Discover more about Saturday Morning Physics:** <http://www.saturdaymorningphysics.org>

**View past lectures on YouTube:** <http://tinyurl.com/nwb8ydu>