

# Cosmology Research Overview

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Cosmology From Home 2022



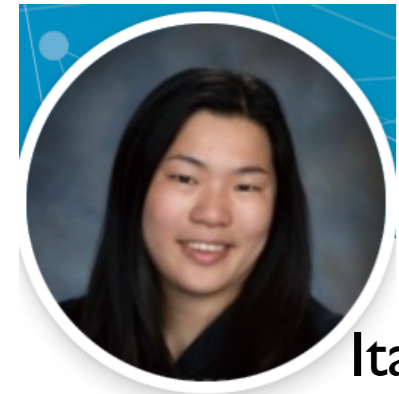
# Overview

Theoretical cosmology at the interface of particle physics and astrophysics

[Inspire papers link](#)

# Recent Students/Postdocs

Jessie Yang  
—> UW PhD



Mark Gonzalez  
—> Yale PhD



Eunice Beato  
Wellesley Senior



Yi Lyu  
UCSC Senior



Itamar Allali  
Tufts PhD



Jake Litterer  
Tufts PhD



Neil Shah  
Tufts PhD



Mudit Jain  
—> Rice  
Postdoc



Enrico  
Schiappacasse  
—> Rice Postdoc



Demao Kong  
—> UCR PhD



McCullen Sandora  
—> U-Penn visitor



Fabrizio  
Rompineve  
—> CERN Postdoc



# Recent and ongoing research topics

Jessie + Fabrizio → Constraints on hidden sectors from dark glueball stars

Mark + Fabrizio → Hubble tension with ultralight axions and photon resonance

Itamar + Fabrizio → New dark sectors to resolve Hubble and S8 tensions

Eunice + Jake → Constraints on quantum aspects of gravitational waves

Yi + Itamar → New axion dark matter models with altered abundance

Itamar → Calculating quantum decoherence in dark matter and general relativity

Jake + McCullen → Constraints from locality on spin 2 particles and need for Lorentz symmetry

Neil + Fabrizio → Analysis of computational techniques for quantum tunneling in field theory

Neil + Jake → Causality and locality constraints on superfluid dark matter models

Mudit → Constraints on inflation and reheating from Standard Model Higgs instability

Enrico → Axion stars and resonance into photons, plus novel effects near black holes

Demao → Constraints on models to address core-cusp problem at center of galaxies