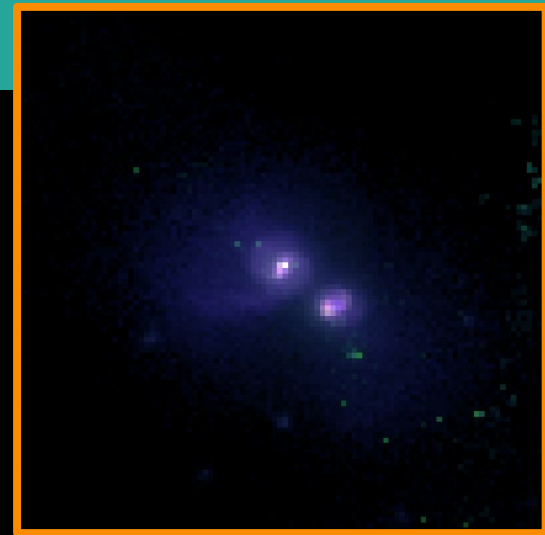


# Host Galaxy Morphological Signatures of Massive Black Hole Mergers

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Jaeden Bardati

Supervisors: John Ruan & Daryl Haggard



# Motivation

## **Context:**

Hierarchical galaxy formation form Massive Black Hole (MBH) binaries detectable by LISA/PTAs

In a localization region, there are many possible galaxies, making GW host identification difficult

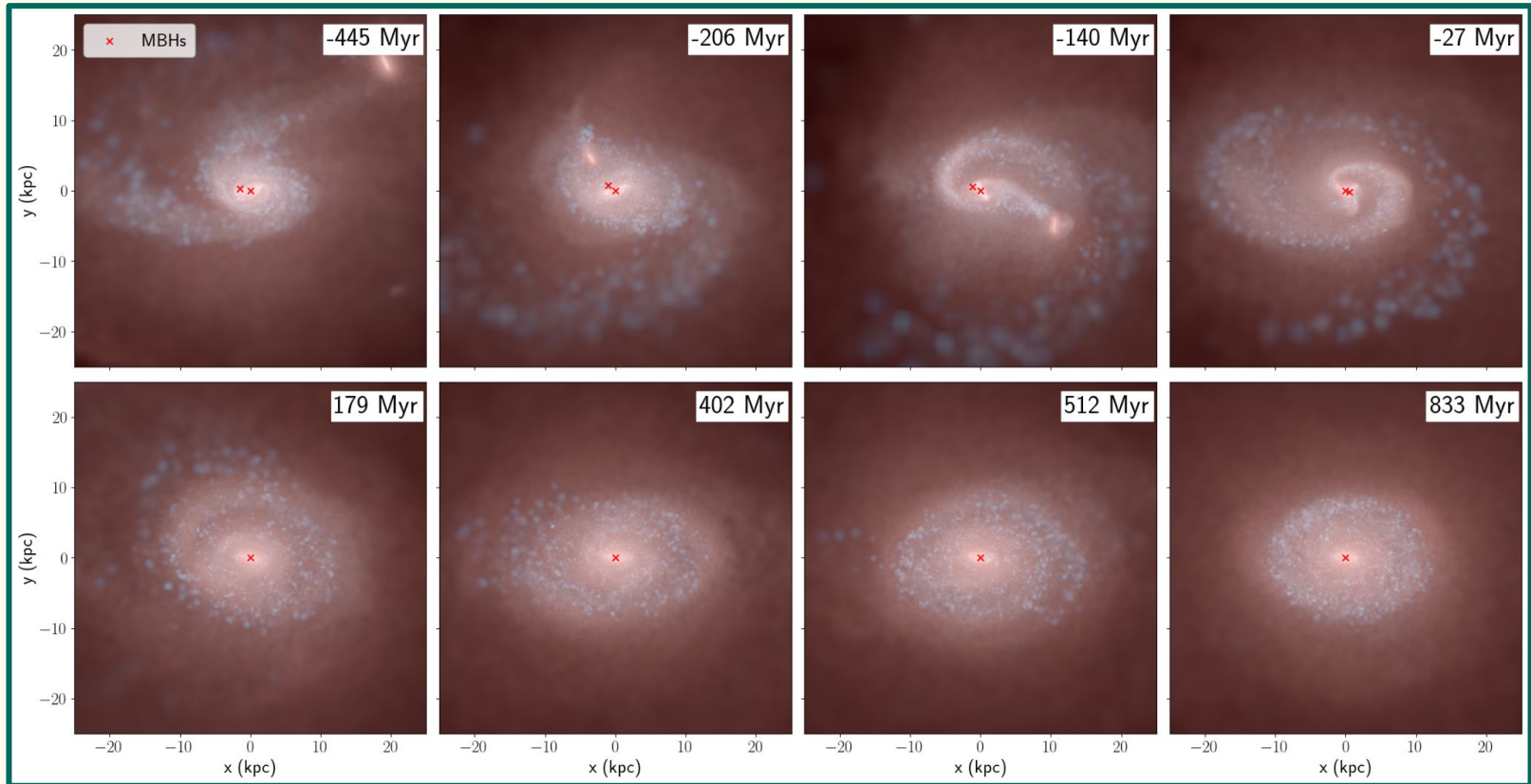
## **Question:**

Can we distinguish between galaxies that host MBH mergers and those that do not host MBH mergers through morphological differences in electromagnetic-wave observations?

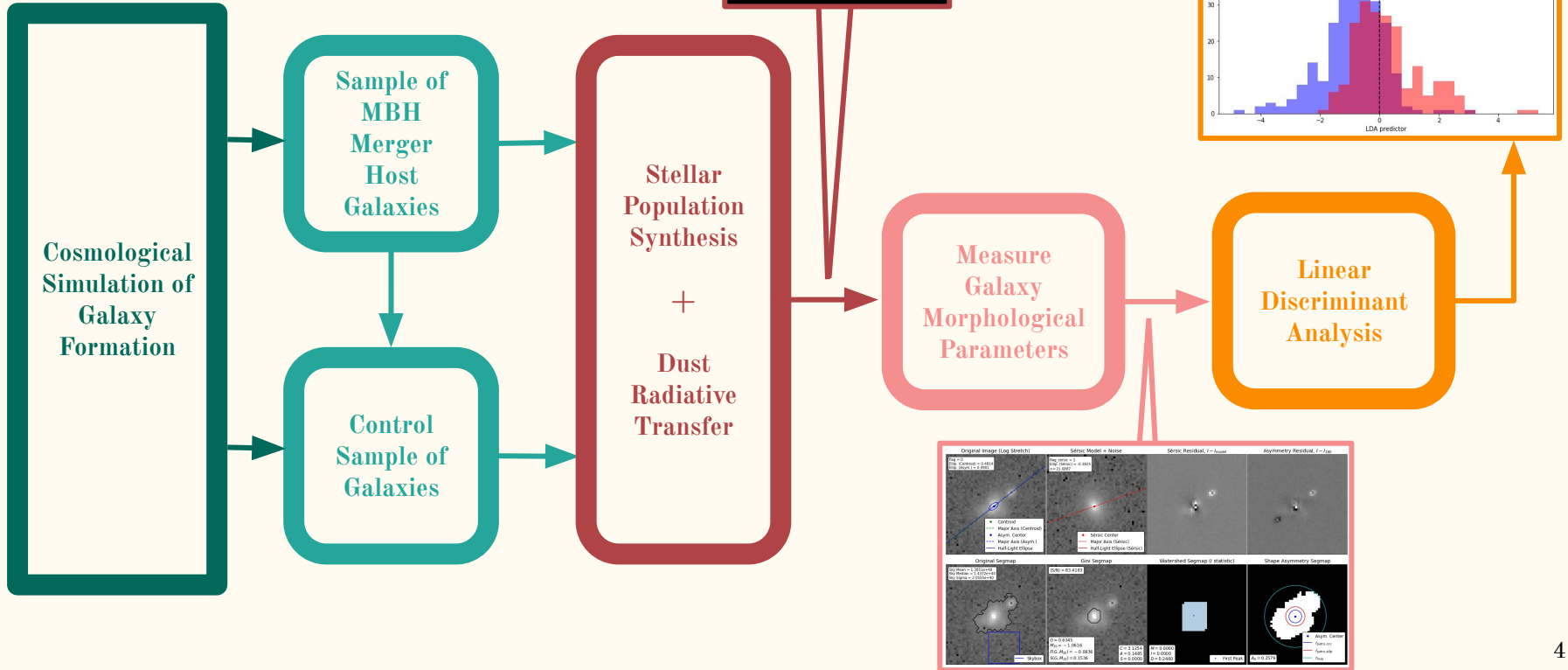
## **Our approach:**

Create mock images using stellar population synthesis and dust radiative transfer on simulated galaxies that either host or do not host merging MBHs to study their morphologies

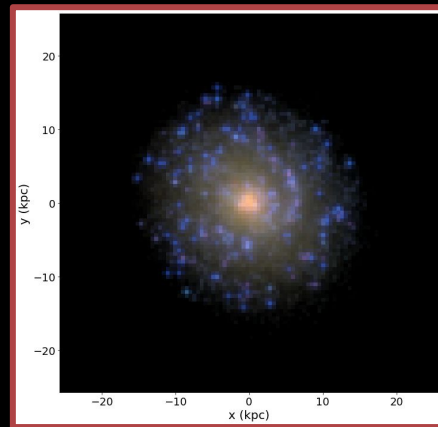
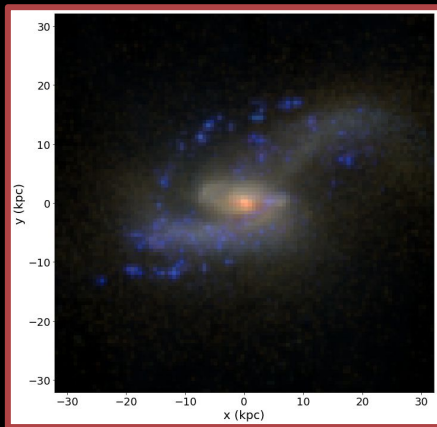
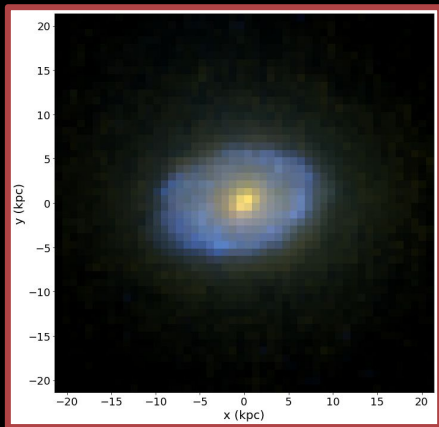
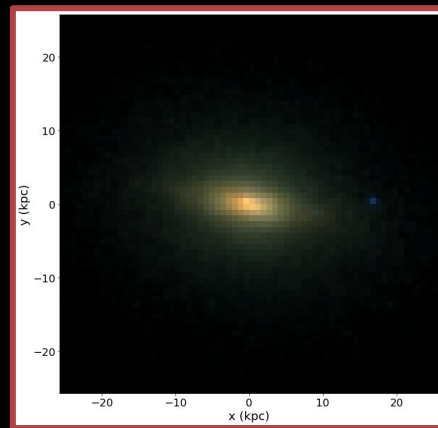
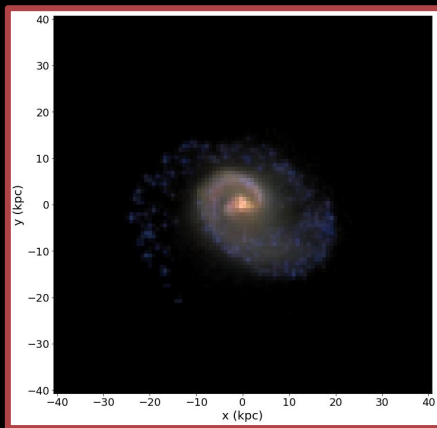
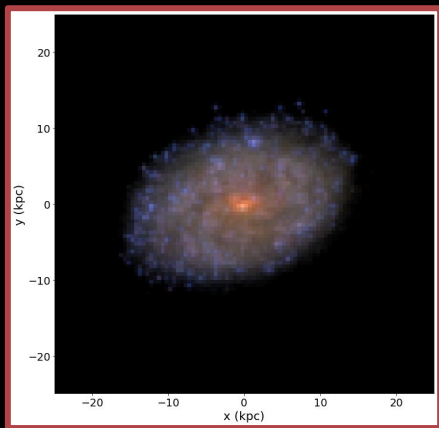
# Relation between Galaxy Morphology and MBH Mergers



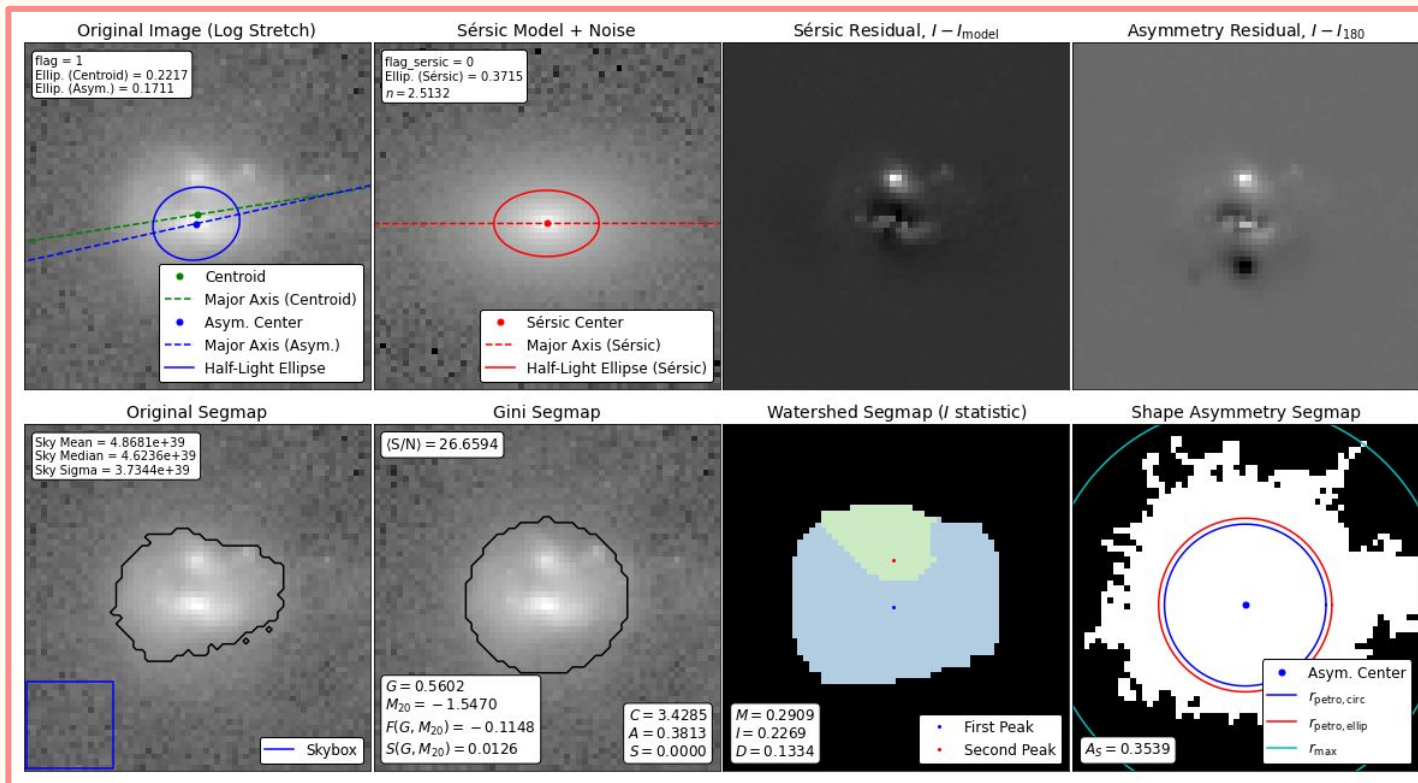
# Methods



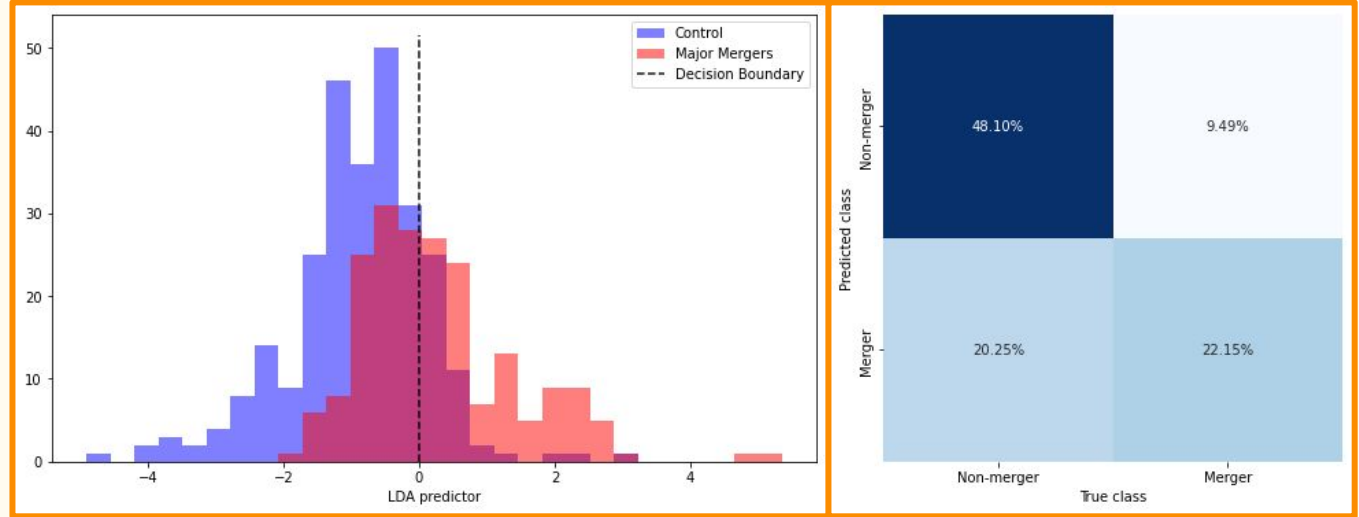
# Mock Images



# Measuring Morphological Parameters



# Linear Discriminant Analysis Preliminary Results



# Summary

