ASTROPHYSICS SEMINAR SERIES

AUTOMATED PHYSICS RECOVERY FROM GALAXY OBSERVATIONS

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I discuss new methods that allow computers to recover the underlying physics of galaxy formation using only galaxy observations and dark matter simulations, and show how these methods have already changed our understanding of galaxy formation physics (including why galaxies stop forming stars). Basic extensions to the same techniques allow constraining internal galaxy processes, including coevolution between galaxies and supermassive black holes as well as time delays for supernova / GRB progenitors. Finally, I discuss how these methods will benefit from the enormous amount of upcoming data in widefield (HETDEX, LSST, Euclid, WFIRST) and targeted (JWST, GMT) observations, as well as ways they can benefit observers, including making predictions for future telescopes (especially JWST) and testing which of many possible targeted observations would best constrain galaxy formation physics.

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