How can Brane World physics influence Axion temperature dependence, initial vacuum states, and permissible solutions to the Wheeler-De Witt equation? ANDREW BECKWITH, APS/ Fermi contractor — We are investigating if the Jeans instability criteria mandating a low entropy, low temperature initial pre inflation state configuration can be reconciled with thermal conditions of temperatures at or above ten to the 12 Kelvin, or higher, when cosmic inflation physics takes over. We justify this by pointing to the Ashtekar, Pawlowski, and Singh (2006) article about a prior universe being modeled via their quantum bounce hypothesis which states that this prior universe geometrically can be modeled via a discretized Wheeler – De Witt equation The prior universe would provide thermal excitation into the Jeans instability mandated cooled down initial state, with low entropy, leading to extreme graviton production occurs before the Bogomolnyi inequality compliments the assumption of axion wall mass disappearing due to high temperatures as a way to embed a quadratic chaotic inflationary scalar potential. Our argument pre supposes that the low entropy conditions due to Jeans instability can be successfully reconciled to a requirement later on that axion mass disappears with induced thermal excitation from inputs from the quantum bounce point from a prior universe. This would provide a convenient template for analyzing relic graviton production.

Andrew Beckwith
APS/ Fermi contractor