Finite Size Effects and Commensurability in Lattice Simulations of Symmetric Diblock Copolymers AKASH ARORA, FRANK S. BATES, KEVIN D. DORFMAN, Chemical Engineering and Materials Science, University of Minnesota, Minneapolis MN, USA — Monte Carlo (MC) simulations have been used widely to study the fluctuation driven weakly first-order transition in symmetric diblock copolymers. However, the predicted value of the order-disorder transition ($\chi_{\text{ODT}}$) often differs from the true value (thermodynamic limit) because of the finite size of the simulation box. In order to locate the true ODT, we have studied finite size effects in lattice MC simulations of lamella forming symmetric diblock copolymers. The straightforward application of finite size scaling (FSS) is questionable due to incommensurability between the ordered structure domain spacing and the periodicity of the lattice. To address this issue, we estimate the preferred domain spacing by simulating multiple system sizes to find nearly commensurate systems. Furthermore, we apply FSS to these nearly commensurate systems to predict the ODT in the thermodynamic limit.