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Center Vortices and Confinement DERAR ALTARAWNEH, MICHAEL ENGELHARDT, New Mexico State University — A promising picture of confinement in QCD can be obtained based on a condensate of thick vortices with fluxes in the center of the gauge group (center vortices). A number of studies of this picture have been made and specific models have been formulated to obtain a concrete realization of the vortex picture. In our model, vortices are represented by closed random lines in 2+1 dimensional space-time. These random lines are modeled as being piece-wise linear and an ensemble is generated by Monte Carlo methods. The physical space on which the vortex lines are defined is a cube with periodic boundary conditions, and I have developed the necessary algorithms which implement those boundary conditions as the vortex lines evolve across the boundaries. When two vortices become close to each other, it is possible that they connect to one another. Also the inverse process, that a vortex separates at a bottleneck, is allowed. My ensemble therefore will contain not a fixed, but a variable number of closed vortex lines. This is expected to be important for realizing the deconfining phase transition. After all processes have been implemented, I will be ready to start calculating Wilson loops and from that, the potential between quarks and anti-quarks. We can study quark confinement and also ha

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