Linear Programming (LP) is the most widely used mathematical model for real world applications that involve optimization. In the past fifteen years, Interior Point Methods (IPMs) have become highly successful in solving LP problems, especially large-scale ones, while enjoying good theoretical convergence and complexity properties. Nevertheless, for the IPM that is implemented in most codes, the Mehrotra Predictor-Corrector (MPC) algorithm, no global convergence or complexity theory is available. We construct a similar algorithm to the MPC algorithm, the Primal-Dual Corrector (PDC), and show that the PDC may fail to converge to a solution of the LP problem in both exact and finite arithmetic. Moreover, we present two ways of modifying the PDC algorithm that lead to theoretically reliable and practical methods.

PERIOD 2: Monday July 4\textsuperscript{th} - Wednesday July 6\textsuperscript{th}