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One essential feature of the Low Energy Beam and Ion Trap (LEBIT) Facility is the laser ablation source (LAS) system. Comprised of a laser source, extraction system, three electrostatic quadrupoles, and an ion target, the system use the photoelectric effect to ablate charged particles from the target and guide it into the beam line for mass measurements. To achieve optimization, various parts of the contraption must be altered via system tuning. The process normally involves adjusting the voltages of various electrodes and monitoring the resulting behavior of the ions until they behave in a desired manner. Recently, the location of the gate valve has been changed which affected distance between the position of the extraction system and quadruple deflectors. This in turn will negatively affect the total efficiency of the ion beam source passing into the line because not all ions pass through the system. In order to resolve this problem, a simulation program, called SIMION, is used. Through the program, we aim to update the configuration of parts within LAS system and discover the optimum settings for focusing the trajectory and guiding it to its destination. From these settings, we can begin to take more reliable measurements for the Q-value of  $^{96}\text{Zr}$ . (Received September 17, 2013)