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**Thomas P Kendall\***, 646 Swift Road, West Point, NY 10996, and **Louis Kim**. *Optimizing Weapon Accuracy and Zeroing Practices*.

An accurate soldier is a lethal soldier, lethal soldiers make an effective army, and an effective army is a deterrent to war. We aim to apply optimization methods to nonlinear trajectory models to make every soldier more lethal with their assigned weapon system (and hunters more humane with their rifles). We first derive an appropriate trajectory model accounting for drag and the characteristics of both the munition and weaponry being used. We then develop methods to optimize the trajectory of the average soldier's bullet over a specified range in a way that can be immediately implemented with negligible impact to current infrastructure, equipment, practices, and procedures. Next, we develop the mathematics behind an aiming device which considers the angles at which a weapon is aimed and tilted, and automatically adjusts to produce the optimal bullet trajectory over a specified range. We design this device prioritizing minimum power consumption, low weight, and the absence of additional devices such as laser range finders. Finally, we present a modified device for minimizing error on a target at an estimated distance intended for hunters and snipers. (Received January 25, 2022)