1176-00-238   **Rory Anne Blankenship*** (`rory.blankenship@westpoint.edu`), **James E Bluman** and **Josiah Steckenrider**. *Lissajous Search Patterns.* Preliminary report.

As barriers to entry into drone technology decrease, organizations from the Department of Defense to small businesses have begun widely employing the UAVs to reduce risks and make operations more efficient. During search operations it is often critical that the search space is cleared as thoroughly as possible while minimizing the amount of time it takes to find the target. Widely used search methods such as the expanding square and the lawnmower patterns perform poorly when targets are located along the periphery of the search space. A need exists for a deterministic flight pattern that is able to quickly locate targets within any sector of the search space in the minimum amount of time. Lissajous curves provide an easily tunable pattern with sweeping characteristics which allow the drone to quickly reach more regions within a given period of time. Monte Carlo simulations are used to evaluate different lissajous patterns in order to find the best parameters given the size of the target relative to the search space and compare these results to existing patterns. (Received January 24, 2022)