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**Abstract:**

The mathematical theory of search for lost objects got a significant test in 1966 when the US Air Force lost an H-bomb in the Mediterranean Sea near Palomares, Spain, and it was found using the techniques of Bayesian probability. The same methods were used when the nuclear submarine Scorpion was lost in the Atlantic in 1968. We'll describe the techniques used in those two incidents, including Monte-Carlo simulation, Bayesian updating, and the Random Search Formula. We'll also cover more recent aspects of the theory of optimal search, including problems with moving targets and constraints on the searcher's path. Much of the theory was developed by the speaker's colleagues at Wagner, Associates during the 1980's and 1990's.

Also note: We'll use mainly techniques from Math 205.