Base Rate Bias and False Positives: Vetting Provocative Radio Transients. Thomas W. Hair (twhair@fgcu.edu), Florida Gulf Coast University, 10501 FGCU Blvd., Fort Myers, Florida 33965.

Abstract:

Most searches for alien radio transmissions have focused on finding omni-directional or purposefully earth-directed beams of enduring duration. However, most of the interesting signals so far detected have been transient and non-repeatable in nature. These signals could very well be the first data points in an ever-growing data base of such signals used to construct a probabilistic argument for the existence of extraterrestrial intelligence. This paper looks at the effect base rate bias could have on deciding which signals to include in such an archive based upon the likely assumption that our ability to discern natural from artificial signals will be less than perfect.

Highlights:

- Most provocative signals have been transient and non-repeatable in nature.
- Base rate bias is a consequence of Bayes' Theorem in low false positive situations.
- A thought experiment is offered wherein an algorithm searches for signals.
- An analysis of this thought experiment is then presented.
- A long duration search may take quite a while to find even one probable artificial signal.

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