

Search for narrow and wideband radio emissions from the interstellar asteroid Oumuamua

The interstellar asteroid Oumuamua is the first found object within our solar system where we are certain it originated outside of our own solar system. Oumuamua has the unexpected shape of a long, thin, cigar and took a path through the solar system that coincidentally passed relatively close to Earth. It appears to have travelled through the interstellar medium for millions of years or more. Here we test the hypothesis that Oumuamua is an artificial space probe constructed by a distant civilization. Without actually visiting the object, the best we can do is to look for unusual emissions, and this paper describes a survey for radio emissions from 1-10 GHz taken with the ATA. We describe the results of an automated search for very narrowband emissions (1-100 Hz bandwidth) and perhaps more interestingly, a search for relatively wide bandwidth signals with bandwidths in the range 0.1-1000 MHz. We will describe the wideband analysis method, its sensitivity limitations, and report on the results. For comparison, we also present the results of emission tests of two intra-solar asteroids analyzed in the same way.