

51st IAA SYMPOSIUM ON THE SEARCH FOR EXTRATERRESTRIAL INTELLIGENCE (SETI) –  
The Next Steps (A4)  
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INTELLIGENCE (SETI) – The Next Steps (IP)

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WHAT IF OUMUAMUA WERE AN ALIEN CRAFT? RESEARCH PROGRAMS ARISING.

**Abstract**

The controversial hypothesis that ‘Oumuamua (1I/2017 U1) was an alien craft dominated by a solar sail is considered, using known physics, for the two possible cases: controlled and uncontrolled flight. The challenges of reliability engineering for an artifact lasting for  $10(5) - 10(6)$  yr are also considered. All three areas generate research programs going forward. The uncontrolled case could be either “anonymous METI” (messaging by extraterrestrial intelligence) or “inadvertent METI”. In the controlled case the nature of the origin star, trajectory guidance from the origin star to the Sun, and the identity of a destination star are all undecided. The “controlled” case has more strikes against it than the “uncontrolled” case, but neither suffers a knock-out blow, as yet. Some of the issues turn out not to be major obstacles to the alien craft hypothesis, but others weaken the case for it. Most, however, imply new studies. Some of these, e.g. intercept missions for new interstellar objects, are concepts being developed, and will be of value whatever these objects turn out to be. Overall, these considerations show that a many-pronged, targeted, research program can be built around the hypothesis that ‘Oumuamua is an alien craft. The considerations presented here can also be applied to other interstellar visitors, as well as to general discussions of interstellar travel.