

Design, Fabrication and Testing of Solar Thermal Thruster for CubeSats During Covid-19

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Recent research has pointed out the feasibility and benefit of steam-solar thermal propulsion systems for small satellites. With the growing importance of CubeSats in space endeavors a safe, powerful and refuellable propulsion system is the next item for research focus. This project aims to design, fabricate and analyze a solar thermal propulsion system at a very high level. Due to the current Covid-19 pandemic, typical design iteration methods were not feasible and instead more focus was placed on design justification and modeling before fabrication. As a setup targeted towards testing and analysis, emphasis was placed on the cost and mechanical behavior of the components as opposed to viability for use in space. Difficulties involved with component sourcing due to the pandemic also contributed to the decision-making process. Results will indicate the levels of correlation between current simulation models and real behaviors of the different subsystems. Additional insights will be gained into the challenges faced when transitioning prior more theoretical studies into a working design. These findings will be able to aid future studies that aim to develop the technology of solar thermal propulsion more concretely.