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Dr. Alexander J. Smits

Editor-in-chief, AIAA Journal

Department of Mechanical and Aerospace Engineering

Princeton University

Princeton, NJ 08544

Dear Dr. Smits,

Please find enclosed a manuscript that we would like to submit for publication in the AIAA Journal. The paper is titled “Optimal Aircraft Design Decisions under Uncertainty via Robust Signomial Programming”. The paper proposes a new approach for engineering design under parametric uncertainty through robust signomial programming. Within our framework, we pose stochastic design problems as deterministic ones by considering the worst-case robust counterpart of each design constraint. This allows us to

To the best of our knowledge, this is the first attempt at using principles of robust optimization in non-linear problems, and especially in aerospace design. Using an unmanned aircraft design example, we demonstrate that our method is less conservative than legacy design methods such as design with margins, while better protecting against uncertain outcomes.

The authors of this paper are myself and Ali Saab. I am a PhD candidate in the Aerospace Computational Design Lab of MIT’s Department of Aeronautics and Astronautics. Ali recently received his S.M. from the department, and has commenced work outside of academia as a computational engineer.

Thank you for your consideration, and we look forward to your response.

Best regards,

Martin York

Berk Ozturk

Edward Burnell

Warren Hoburg