

Score for [REDACTED]

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

The applicant has solid academic credentials, and has carried out extensive undergraduate research studies related to the chosen research topic, leading to numerous presentations and publications. The importance of the chosen research topic (flapping wing experimental studies) is clearly described. The research plan and expected results are logically stated. The author has the ambitious goal of developing a model based on experiments and follow-on computations of this important topic.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Very Good

Explanation to Applicant

These previous undergraduate studies have led to a number of presentations and publications, and serve as a clear indicator of the applicant's ability to communicate the findings to the broader scientific community. The broader impacts of the proposed study to the community are explicitly stated and explained well.

Score for Frank, Spencer

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Excellent

Explanation to Applicant

Applicant has excellent track record of research that has been presented in scientific conferences. Applicant has developed expertise in chosen area of research, both in numerical and experimental techniques. The applicant is familiar with the complex fluid mechanics issues related to mimicking insect flight and has a proposal on how to untangle certain controversies. The proposal is experimental although some analytical/theoretical development will strengthen the work. Having said that, the proposal itself is quite ambitious, requiring detailed 3D flowfield mapping. The outcome is a "comprehensive aerodynamic theory of flapping flight." This is an ambitious goal and requires much theoretical and analytical effort, thus the previous remark by the reviewer.

Excellent letters of reference.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Excellent

Explanation to Applicant

Applicant has a track record of contributing to NSF's broader impacts. The applicant is realistic in the project's broader impact and addresses NSF's requirements. Perhaps some effort in broader dissemination of the work may include web-based documents, esp. with videos and animations, will be great.

Score for Frank, Spencer

Intellectual Merit Criterion

Overall Assessment of Intellectual Merit

Very Good

Explanation to Applicant

The applicant has had very good academic pressure, and research experience as an undergraduate, with some results presented at APS conference. The proposed work is on 3-D PIV analysis of vortex structure during flapping wing flight, which is an interesting topic.

Broader Impacts Criterion

Overall Assessment of Broader Impacts

Good

Explanation to Applicant

The applicant has been involved in a number of activities related to broader impact areas. Some of the applications of flapping wings are mentioned, and the applicant is encouraged to think about and define further broader impact issues such as increasing the public awareness, education and outreach activities.