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Proposal Review 5 : 2152988

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| Agency Name: | National Science Foundation |
| Agency Tracking Number: | 2152988 |
| Organization: | |
| NSF Program: | CDS&E-MSS |
| PI/PD: | Hickernell, Fred |
| Application Title: | Collaborative Research: Quasi-Monte Carlo for Efficient Simulation |
| Rating: | Good |

Review

Summary

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to intellectual merit.

This work addresses theoretical developments and extensions of QMC methods, which have already proven very useful computationally in many areas of applications.

The team is very strong and consists of a good combination of theoretical and computational experts.

The team has strategic partnerships outside of academy which will likely help with the execution of the proposed work.

In the context of the five review elements, please evaluate the strengths and weaknesses of the proposal with respect to broader impacts.

QMC methods are used in a wide area of scientific applications, and the proposed work will expand the range of possible applications even further.

Expanding the existing Python library QMCPy and incorporating many cutting-edge developments guided by leading researchers will be very useful for the research and application community at large.

While scientific applications are mentioned in the summary, there is very little discussion of specific applications and ways to evaluate the performance of the proposed new work. A clear timeline is also missing.

Please evaluate the strengths and weaknesses of the proposal with respect to any additional solicitation-specific review criteria, if applicable

The proposal addresses the main goal of the solicitation by contributing theoretical and software development for QMC methods, which allow for much faster convergence in many application areas involving sampling.

Summary Statement

I have ranked this proposal in the top third. The team is very strong and clearly has the skills to address the proposed theoretical and computational QMC developments proposed. These developments will broaden the application areas of QMC and will lead to computational advances in many application areas. Software development is also part of the proposal, although not described in much detail. Given the team and history it is credible though. Details on testing of the proposed developments on a range of scientific application are also missing.



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