Proposal Review 3 : 2053714

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Agency Name:	National Science Foundation
Agency Tracking Number:	**2053714**
Organization:	
NSF Program:	CDS&E-MSS
PI/PD:	Hickernell, Fred
Application Title:	Collaborative Research: Quasi-Monte Carlo Community Software
Rating:	Very 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 proposal is to build on a new software project called QMCPy, which implements quasi monte carlo sampling for numerical evaluation of expected values of functions of random variables. The proposed work will implement new features into the software project and engage the community of researchers in QMC sampling to grow the project.

The idea to build software that people can actually use is worth pursuing. The authors list several use cases for QMC sampling, and show the benefits of the method on some toy examples.

It would have been helpful to include a page or so with a worked example on a real application, to provide some evidence that this is useful for real problems.

The authors list some challenges for parallel implementation, but then go on to say they will do it, without any indication of how they will solve the aforementioned challenges.

Overall, I think this is a project that has a high chance of success and a good chance of having a real impact for researchers.

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

The authors list potential impacts within the community of bayesian software projects. They also predict that the work will lead to new theoretical developments in QMC sampling. Their claim that their work will "showcase the right way" to do QMC sampling, and that they will set an example of good software development for students, and that they will publish their work in journals, present at conferences, and offer tutorials on the software.

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

Summary Statement

This proposal has a high chance of success and impact on fields that need easy access to QMC methodology.

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