

MICHIGAN STATE UNIVERSITY
Department of Statistics and Probability

**A Workshop on Future Directions in
Fractional Calculus Research and Applications**

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Preparing the next generation of researchers

Abstract

It is time to take the ideas of fractional calculus mainstream. The number of articles regarding applications including fractional calculus is growing at a phenomenal rate, but there are still challenges to making the concepts part of the common engineering and scientific paradigm. There are still significant gaps in understanding the implications of non-local interactions and their modeling with fractional order operators. This talk starts with a discussion of some these outstanding mysteries and the need to prepare a new generation of researchers to continue making advances. That will lead into a discussion of some of the insights gained from teaching fractional calculus at the undergraduate level. The focus is on initially developing physical intuition as opposed to mathematical rigor.