# 2022 ALONZO CHURCH AWARD FOR OUTSTANDING CONTRIBUTIONS TO LOGIC AND COMPUTATION

The ACM Special Interest Group on Logic (SIGLOG), the European Association for Theoretical Computer Science (EATCS), the European Association for Computer Science Logic (EACSL), and the Kurt Gödel Society (KGS) are pleased to announce that the 2022 Alonzo Church Award for Outstanding Contributions to Logic and Computation is given to

- **Dexter Kozen**

for his fundamental work on developing the theory and applications of Kleene Algebra with Tests, an equational system for reasoning about iterative programs, published in:

Kleene Algebra with Tests. ACM Transactions on Programming Languages and Systems 19(3): 427-443 (1997)

This work on Kleene Algebra with Tests (KAT) is one of the high points among remarkable contributions of Dexter Kozen to logics of programs. It is a culmination of a series of articles by Dexter Kozen that define and apply Kleene Algebra with Tests (KAT), an equational system that combines Kleene Algebra (the algebra of regular expressions) with Boolean Algebra (the tests). Together, the terms of the two algebras are capable of representing while programs, and their combined equational theory is capable of proving a wide range of important properties of programs. Although reasoning in KAT under arbitrary commuting conditions is undecidable, Kozen observes that when the commuting conditions are limited to including tests, it is decidable and in PSPACE. He illustrates the power of KAT with these decidable commuting conditions by proving a well-known folk theorem: Every while program can be simulated by a program with just one loop. KAT has been successfully applied to a variety of problems over the past 25 years, including modeling and reasoning about packet-switched networks.

The 2022 Alonzo Church Award Committee:

- Thomas Colcombet

- Mariangiola Dezani,

- Javier Esparza ,

- Radha Jagadeesan, (chair) and

- Igor Walukiewicz.

The list of the previous recipients of the Alonzo Church Award for Outstanding Contributions to Logic and Computation is available at `https://siglog.org/awards/alonzo-church-award/`.