THE PRESBURGER AWARD 2022

LAUDATIO FOR DOR MINZER

The 2022 Presburger Committee has unanimously selected

Dor Minzer

as the recipient of the 2022 EATCS Presburger Award for Young Scientists for his deep technical contributions towards resolving the 2-to-2 Games Conjecture.

The Unique Games Conjecture, formulated in 2002, is one of the central open questions in theoretical computer science, providing a plausible explanation of the hardness of approximation for a variety of natural problems, and weaving connections between computational complexity, algorithms, analysis, and geometry. While the jury is still out on this conjecture, the closely related variant of the 2-to-2 Games Conjecture was recently resolved by Minzer and his co-authors over a remarkable series of four papers between 2017 and 2018. "Lesser" variant notwithstanding, it has several important consequences, including establishing the hardness of distinguishing between almost-4-colourable graphs from almost-k-colourable graphs for constant k, and ruling out a polynomial-time-vs-truly-exponential-time dichotomy for approximating constraint satisfaction problems.

The proof of the 2-to-2 Games Conjecture involves a complex process of reformulating and reducing it to a concrete combinatorial hypothesis about the expansion properties of Grassmann graphs, and then proving this hypothesis using tools from the analysis of Boolean functions.

Minzer has also to his credit other strong and insightful results, in areas spanning property testing, information complexity, invariance and isoperimetry, noise sensitivity, and more. Minzer's work establishes him as a world leader in Boolean function analysis, an area central to obtaining and understanding many diverse and significant advances in theoretical computer science

The Presburger Committee 2022

- Mikołaj Bojańczyk

- Uriel Feige

- Meena Mahajan (chair)

The Presburger Award is given to a young scientist (in exceptional cases to several young scientists) for outstanding contributions in theoretical computer science, documented by a published paper or a series of published papers. The award is named after Mojzesz Presburger who accomplished his path-breaking work on decidability of the theory of addition (which today is called Presburger arithmetic) as a student in 1929.

The award includes an amount of 1000 € and an invitation to ICALP 2021 for a lecture.

The following is the list of the previous recipients of the EATCS Pressburger Awards:

2021 Shayan Oveis Gharan	2015 Xi Chen
2020 Dmitriy Zhuk	2014 David Woodruff
2019 Karl Bringmann and Kasper Green Larsen	2013 Erik Demaine
2018 Aleksander Mądry	2012 Venkatesan Guruswami and Mihai Patrascu
2017 Alexandra Silva	2011 Patricia Bouyer-Decitre
2016 Mark Braverman	2010 Mikolaj Bojanczyk