

# FUNCTIONAL ANALYSIS AND OPERATOR THEORY WEBINAR

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## Entrywise positivity preservers in fixed dimension: I

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Which functions preserve positive semidefiniteness (psd) when applied entrywise to the entries of psd matrices? This question has a long history beginning with Schur, Schoenberg, and Rudin, who classified the positivity preservers of matrices of all dimensions. The study of positivity preservers in fixed dimension is harder, and a complete characterization remains elusive to date. In fact until recent work, it was not known if there exists any analytic preserver with negative coefficients.

In my first talk, I will explain the classical history and modern motivations of this problem, followed by a “restricted” solution in every dimension. Central to the proof are novel determinantal identities involving Schur polynomials. I will conclude with a few outstanding questions.

(Based on two papers: with Alexander Belton, Dominique Guillot, and Mihai Putinar, *Adv. Math.* 2016; and with Terence Tao, *Amer. J. Math.*, in press.)

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18 Nov 2020, 12:00 London time

You can join the event via this link:

<https://istaustria.zoom.us/j/97256950873?pwd=bWd6U1kyVXZFQk1wNl15ZTlXTE1ZQT09>

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