

1150-03-505

**Linda Brown Westrick\*** ([westrick@psu.edu](mailto:westrick@psu.edu)). *More universality in two-dimensional shifts of finite type.*

We construct two-dimensional shifts of finite type ( $\mathbb{Z}^2$ -SFTs) at every computable level of the hierarchy of topological completely positive entropy (TCPE), answering Barbieri and García-Ramos, who asked if there was one at level 3. Furthermore, we show the property of TCPE in  $\mathbb{Z}^2$ -SFTs is  $\Pi_1^1$ -complete. Thus there is no simpler description of TCPE in  $\mathbb{Z}^2$ -SFTs than in the general case. (Received July 15, 2019)