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Linear Assignment Maps for Correlated System-Environment States CESAR RODRIGUEZ-ROSARIO, Harvard University, KAVAN MODI, Centre for Quantum Technologies, National University of Singapore, Singapore, ALAN ASPURU-GUZI, Harvard University — An assignment map is a mathematical operator that describes initial system-environment states for open quantum systems. We reexamine the notion of assignments, introduced by Pechukas, and show the conditions assignments can account for correlations between the system and the environment, concluding that assignment maps can be made linear at the expense of positivity or consistency is more reasonable. We study the role of other conditions, such as consistency and positivity of the map, and show the effects of relaxing these. Finally, we establish a connection between the violation of positivity of linear assignments and the no-broadcasting theorem.

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