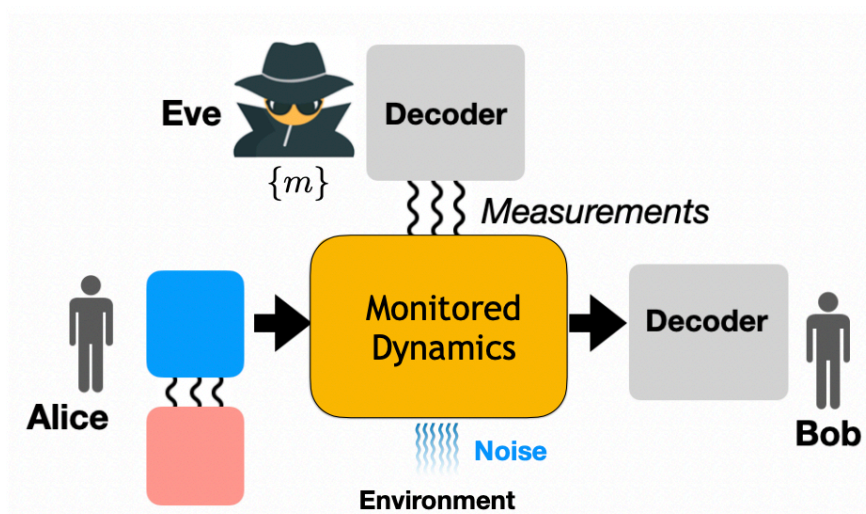


# Phases of quantum information

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Fault-tolerant quantum computers are a new class of complex many-body system, in which repeated measurements and feedback are used to stabilize quantum information against noise. The "phases" and phase transitions of such systems are distinct from those of equilibrium matter. In the past few years, several new concepts have emerged to characterize and classify these phases, based on information-theoretic quantities like whether an adversary can learn the state of the system. I will survey the emerging landscape of information-theoretic phases of quantum matter (also called "mixed-state phases"), discuss their experimental signatures, and comment on some unexpected insights they yield into phase transitions in classical Bayesian inference.



Bio: S Gopalakrishnan has taught at Princeton University since 2022. Prior to that, he held faculty positions at Penn State and the City University of New York, and postdocs at Caltech and Harvard. He received his PhD from the University of Illinois, Urbana-Champaign, in 2012

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