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Neural integrators -- what's optimal and what can we get away with?

Evidence is accumulated over time to come to decisions, but much remains unknown about the neural mechanisms that achieve this. We ask what properties such "neural integrator" mechanisms must have to operate without fine tuning of circuit feedback, without perfect knowledge of stimulus onset times, and without knowledge of the noise structure in incoming sensory representations. Ongoing work suggests that simple mechanisms for signal integration may be more robust than we would guess at first sight. This is joint work with Nick Cain, Andrea Barreiro, Sander Keemink, and Mike Shadlen.