Parameters

Christopher McCabe

Motivating questions

Oliver has expressed a desire to align parameter choices between AION/MAGIS when we discuss future long-baseline instruments

Experiment	(Proposed) Site	Baseline L (m)	LMT n	Atom Sources	Phase Noise $\delta\phi$ (rad/$\sqrt{\text{Hz}}$)
Sr prototype tower	Stanford	10	10^2	2	10^{-3}
MAGIS-100 (initial)	Fermilab (MINOS Shaft)	100	10^2	3	10^{-3}
MAGIS-100 (final)	Fermilab (MINOS Shaft)	100	4×10^4	3	10^{-5}
MAGIS-km	Homestake mine (SURF)	2000	4×10^4	40	10^{-5}
MAGIS-space	Medium Earth Orbit	4×10^7	10^3	2	10^{-4}

TABLE II. Design parameters for MAGIS-concept experiments.

Design	L [m]	T [s]	n	Δz_{max} [m]	N_{atom}	Δt [s]	T_{int} [s]
Intermediate	100	1.4	1000	85	10^8	1.5	10^8
Advanced	1000	1.7	2500	970	10^{10}	1.0	10^8

Apples to apples comparisons?

Are we thinking of the same sequences (Q=1) when we give these parameters?
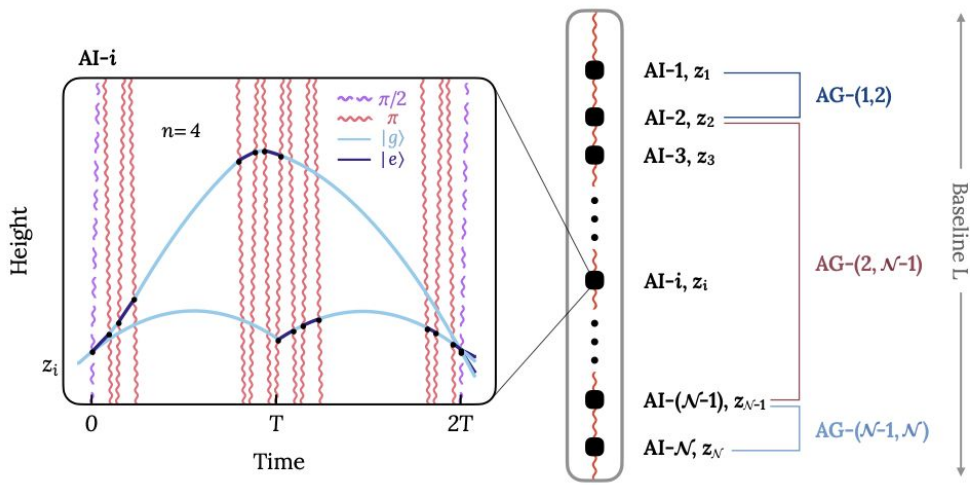
Sequences for 10m [arXiv:2109.10965]