DYNAMICAL DECOUPLING IN INFINITE DIMENSIONS

DANIEL BURGARTH, ABERYSTWYTH UNI

CEQIP 16 16/6/16

C. ARENZ, R. HILLIER, M. FRAAS, D. BURGARTH
PHYSICAL REVIEW A 92, 022102 (2015)

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* SUGGEST A WAY TO TEST COLLAPSE THEORIES

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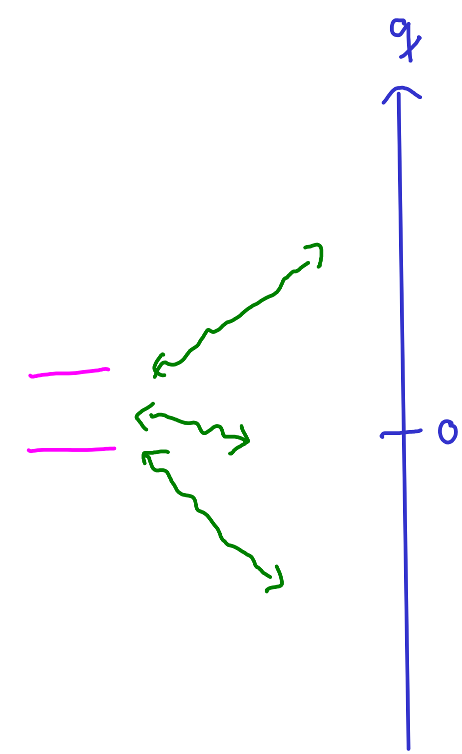

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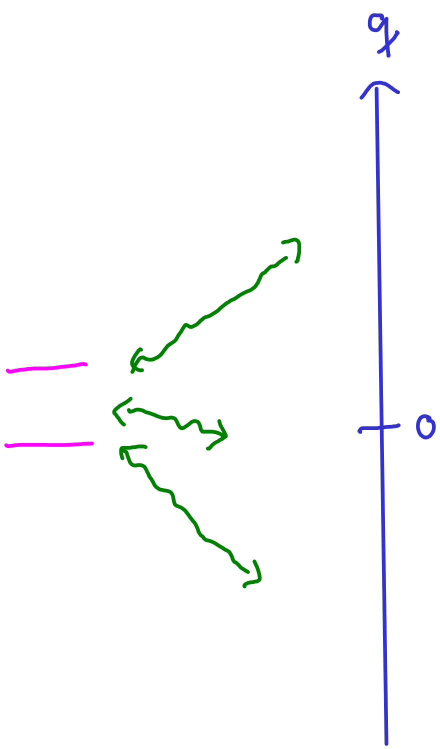

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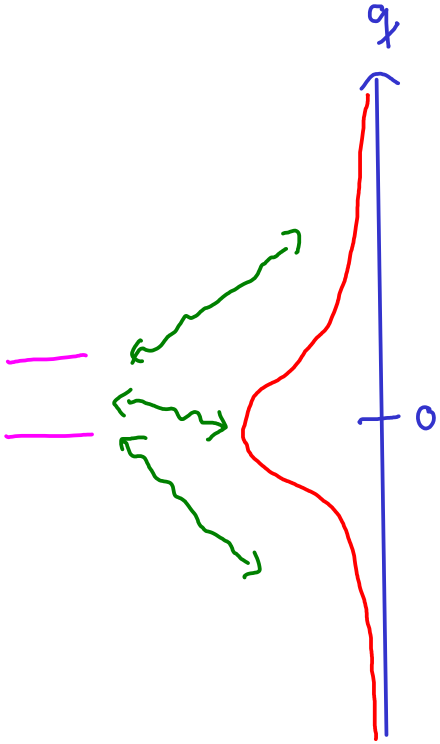

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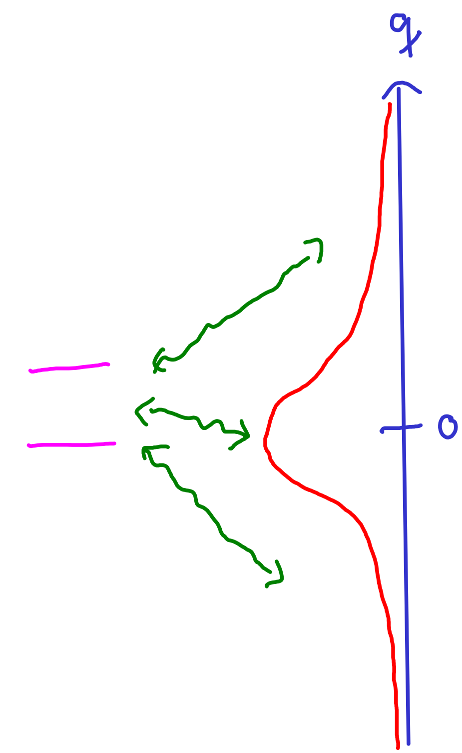

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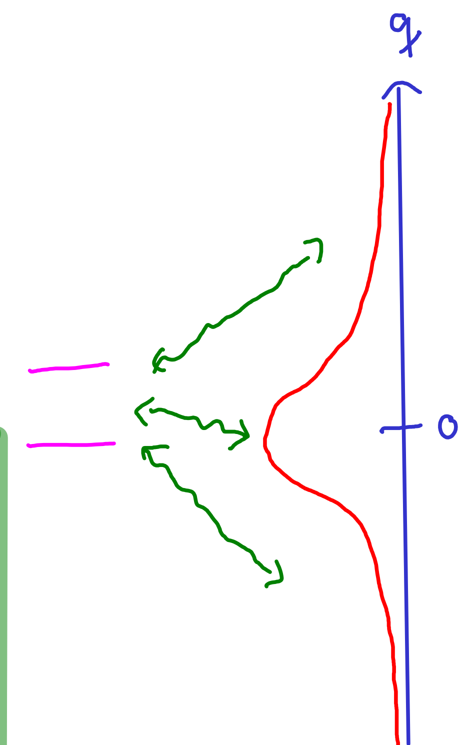

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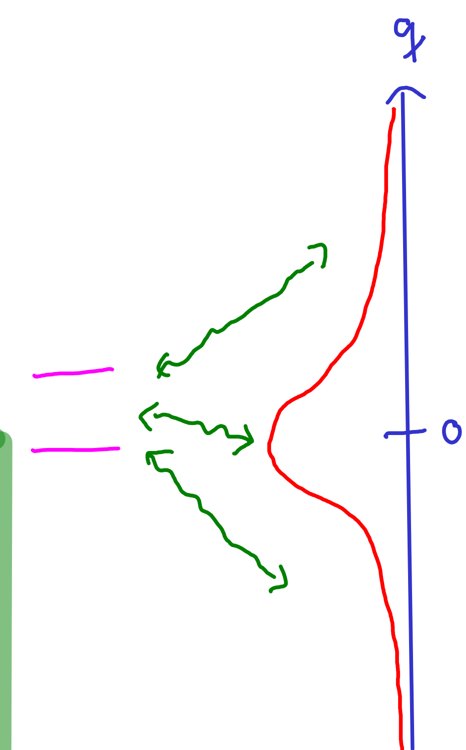

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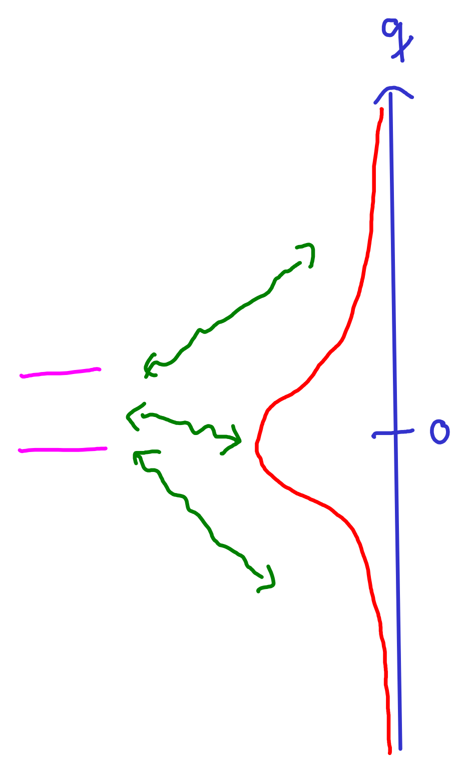

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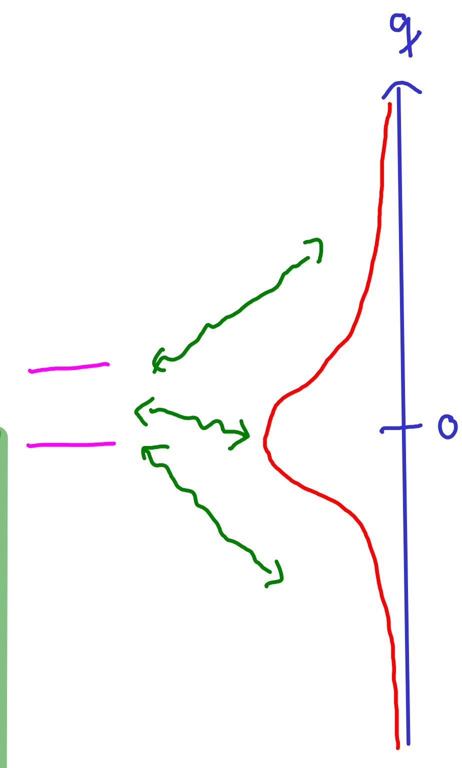

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$$tr_B(\cdots) = \int dq'' \langle q''|\cdots|q''\rangle$$

SOME DETAIL

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SINCE $XHX = -H$, WE CAN DECOUPLE:

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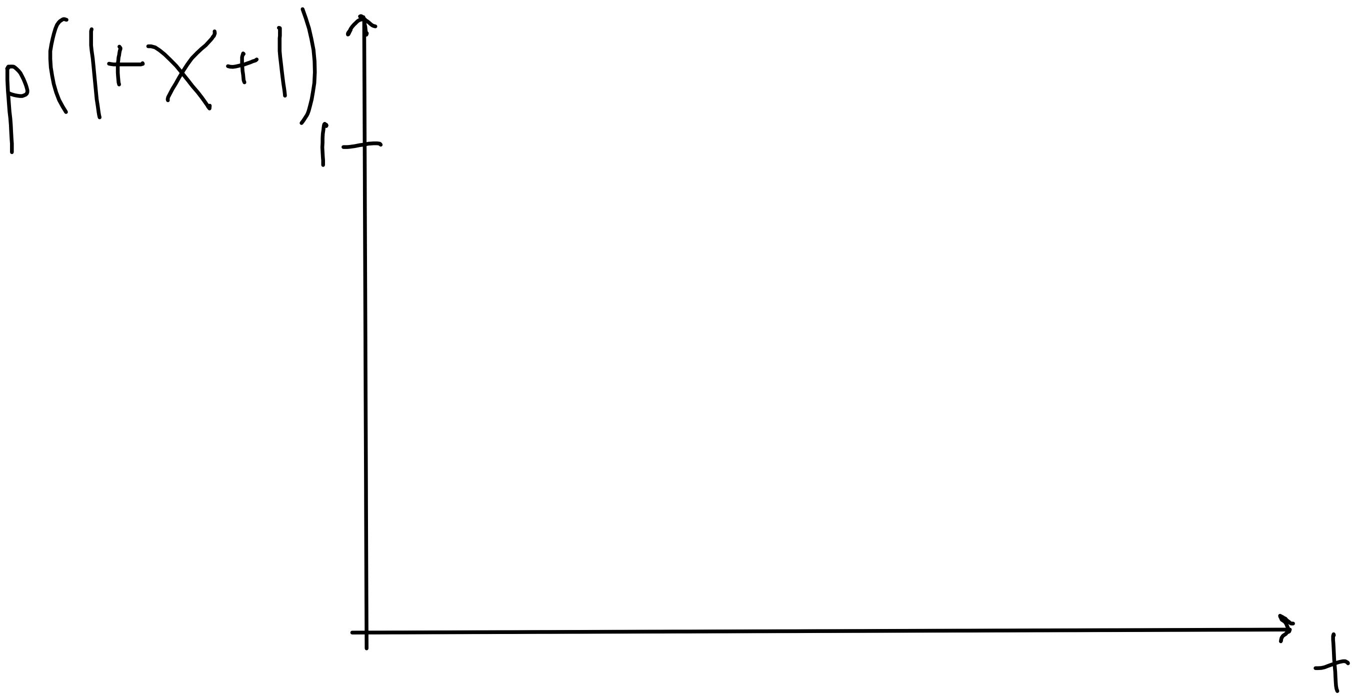

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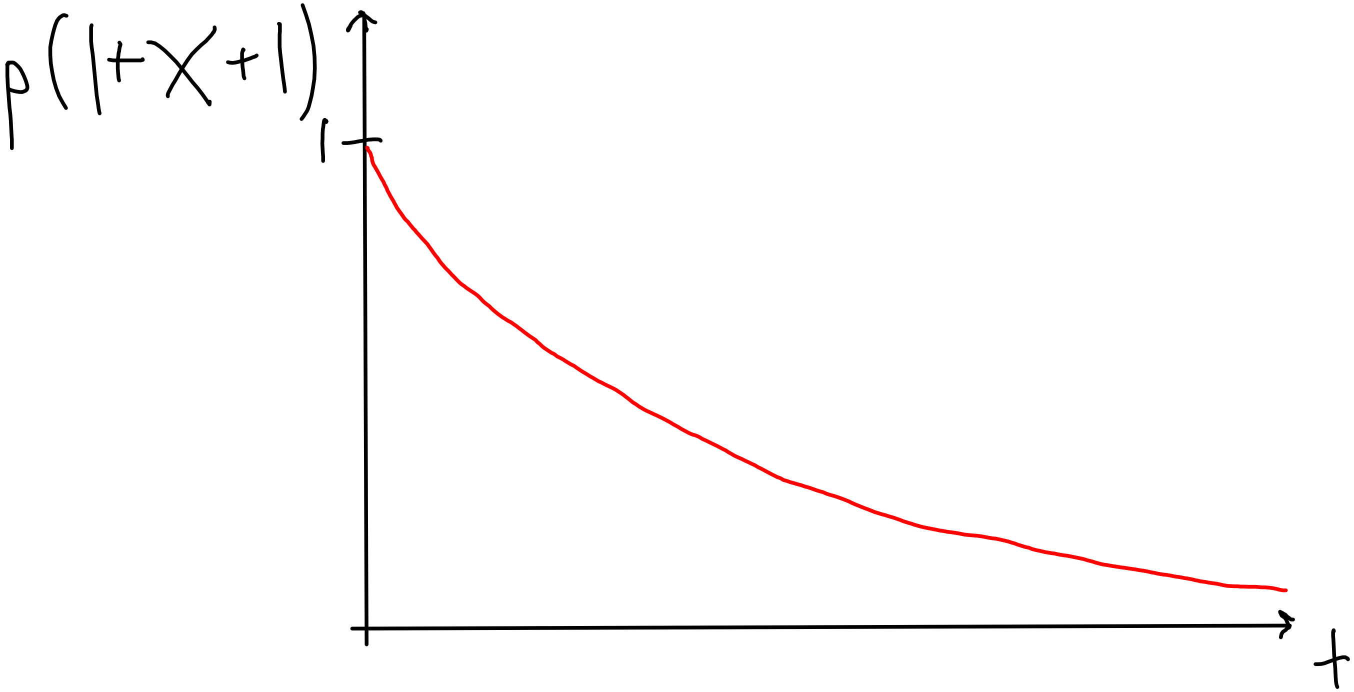

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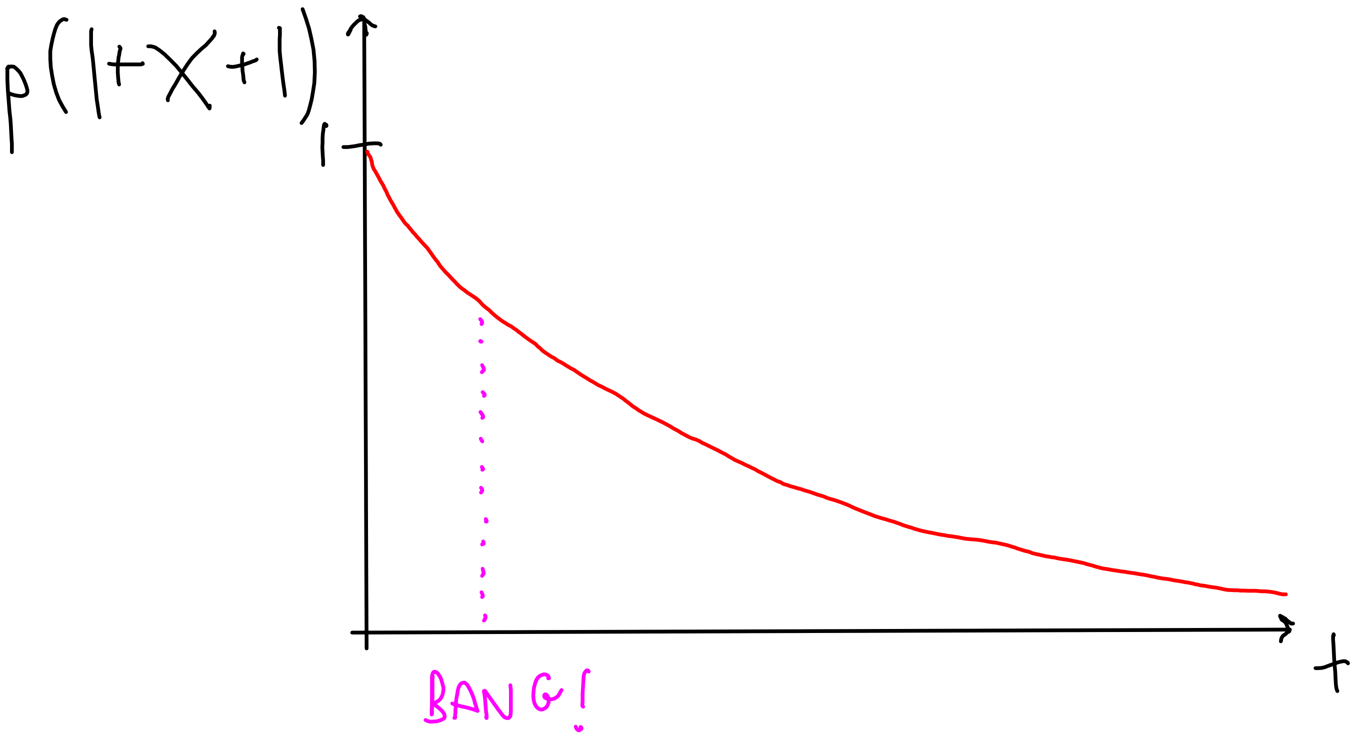

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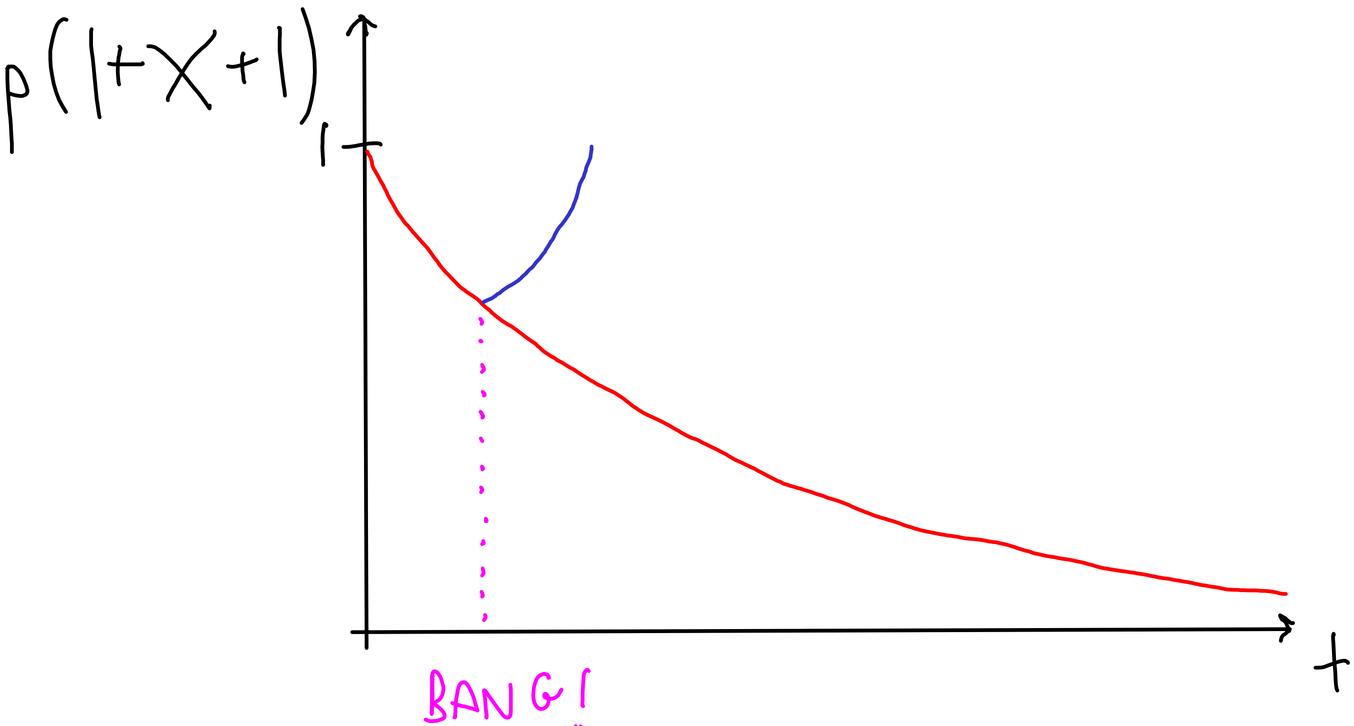

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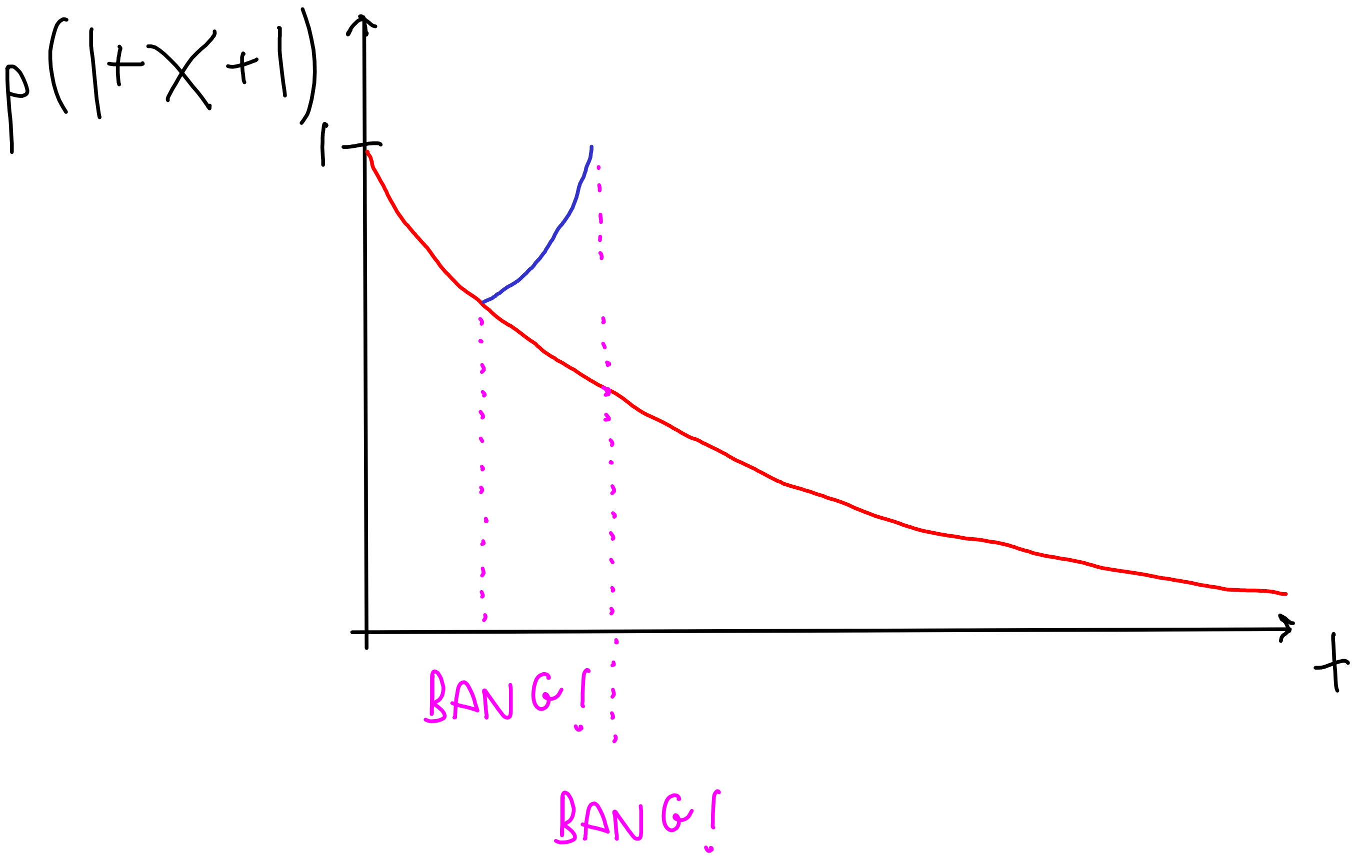

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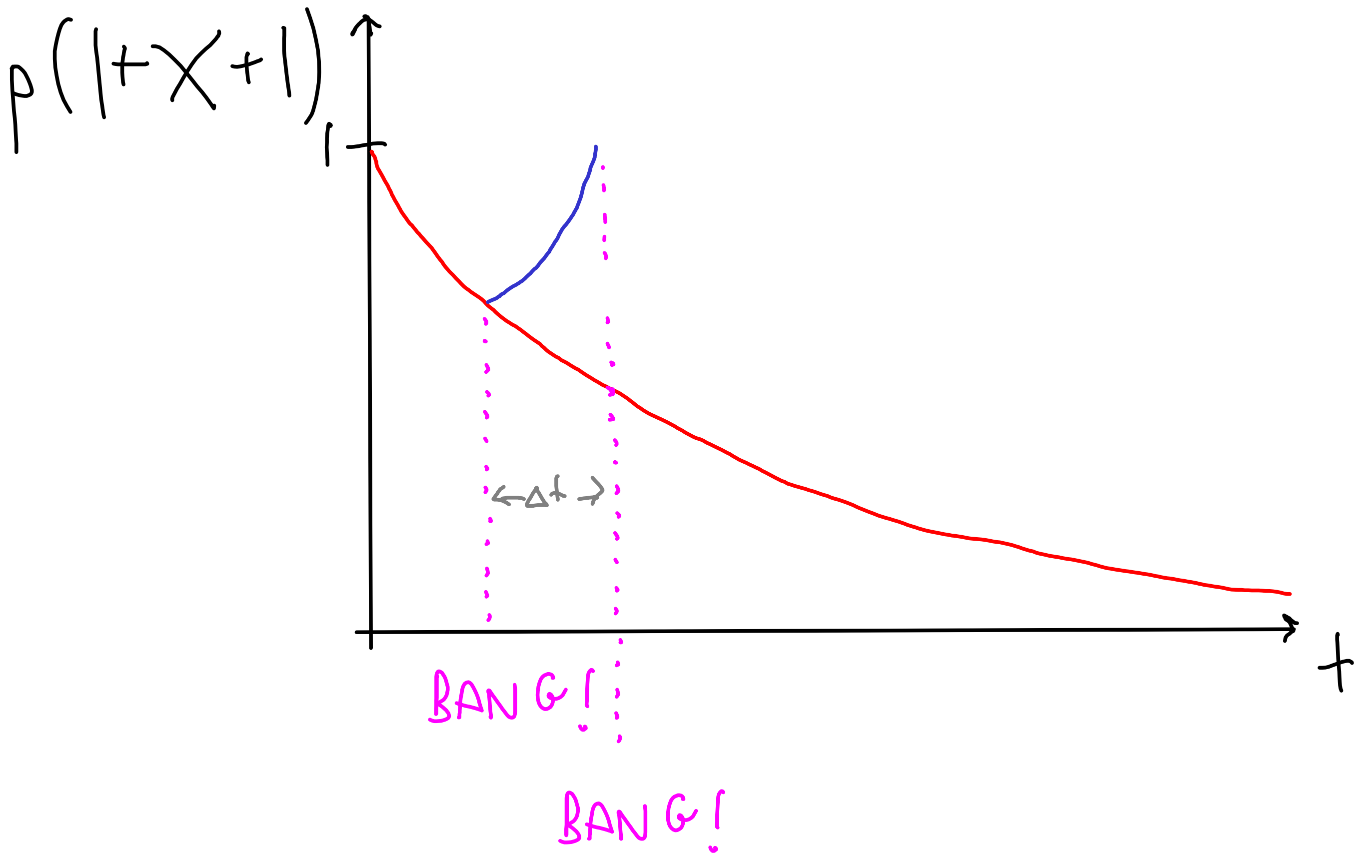

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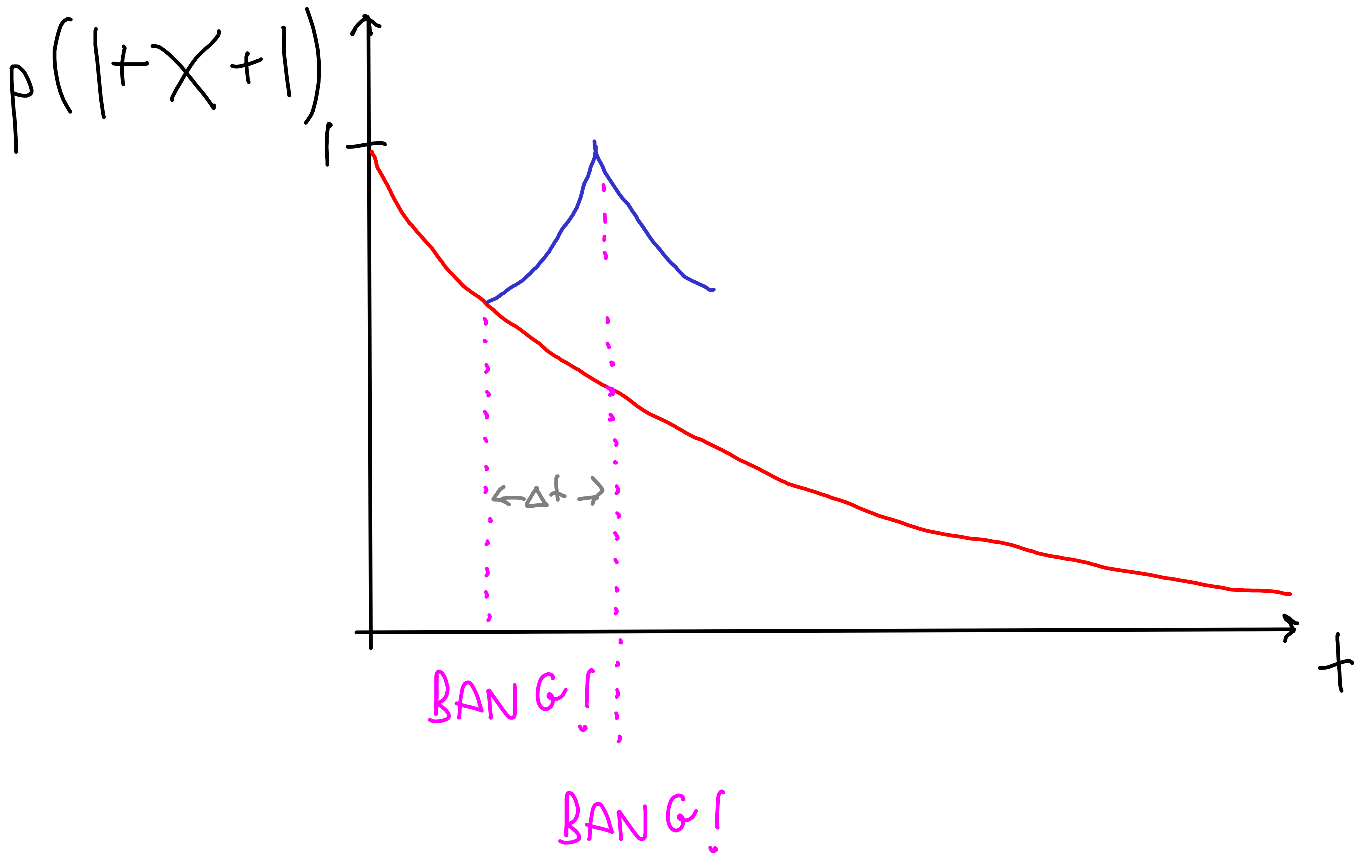

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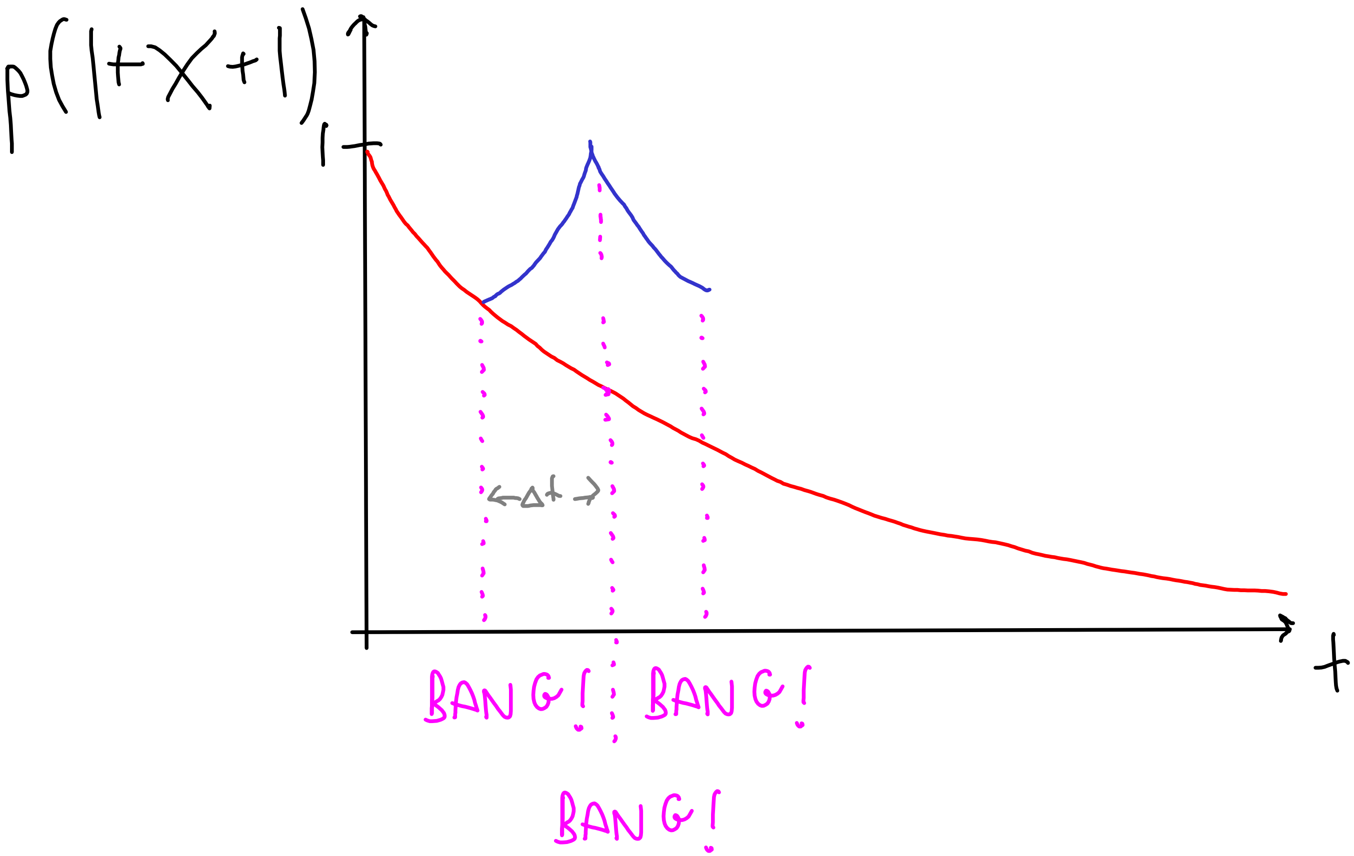

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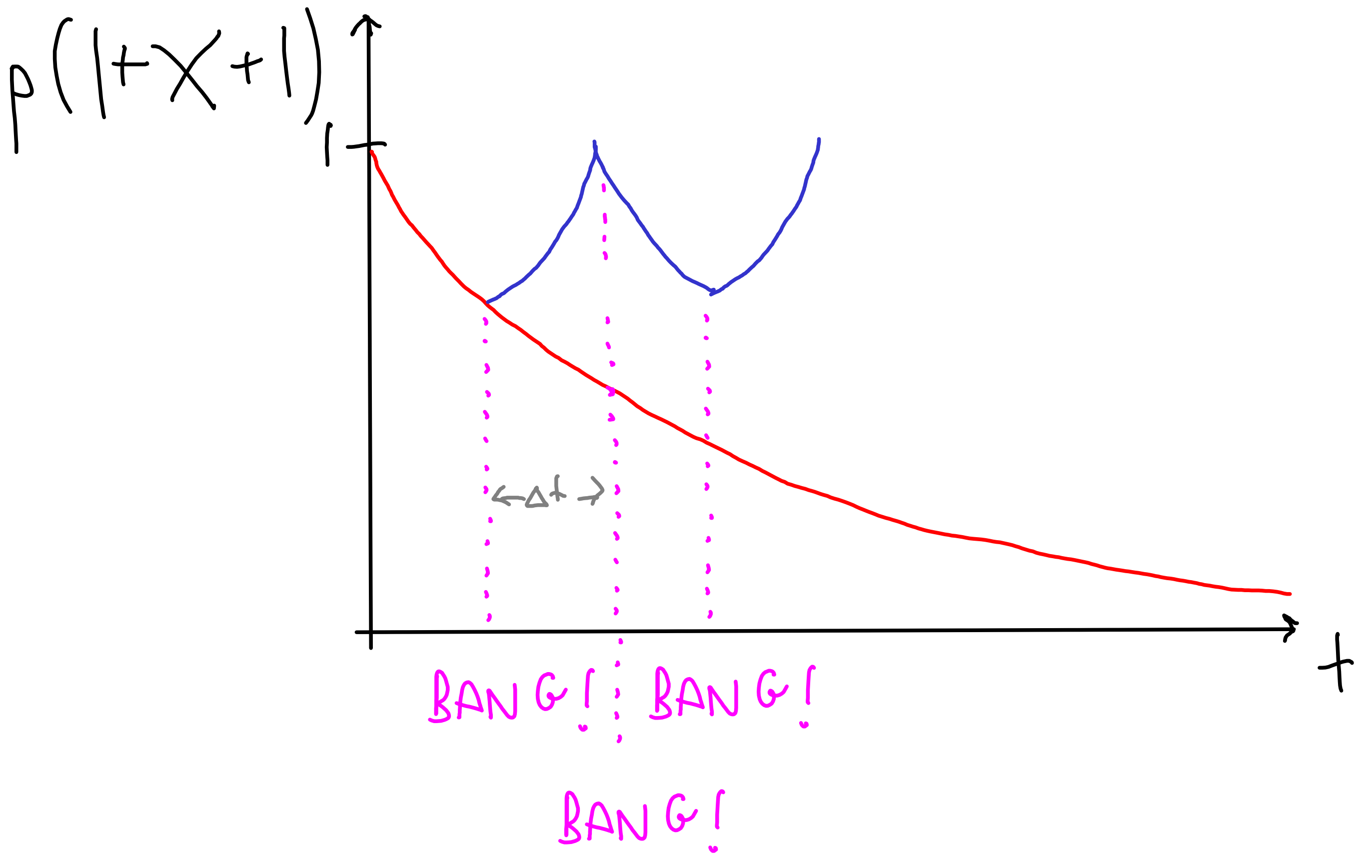

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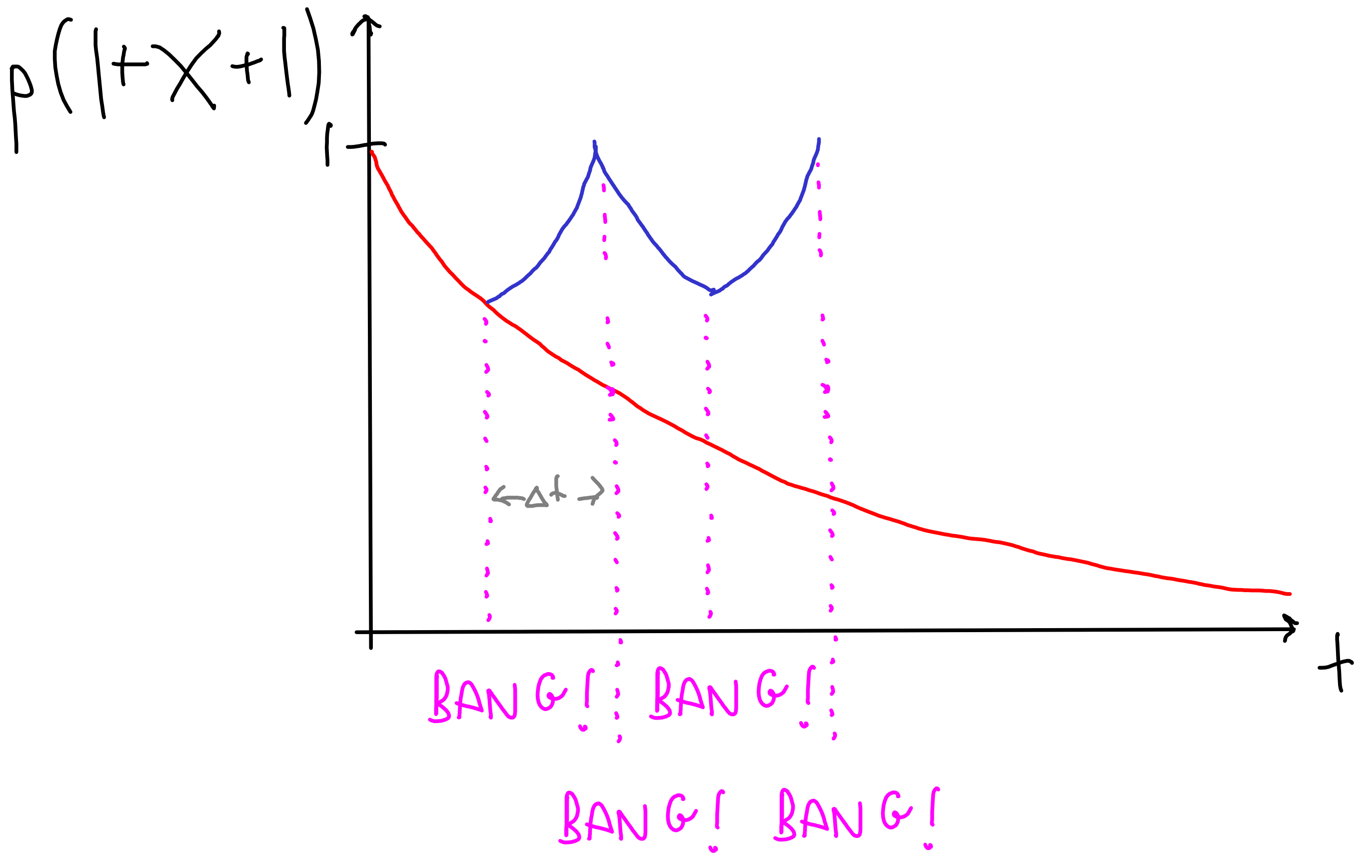

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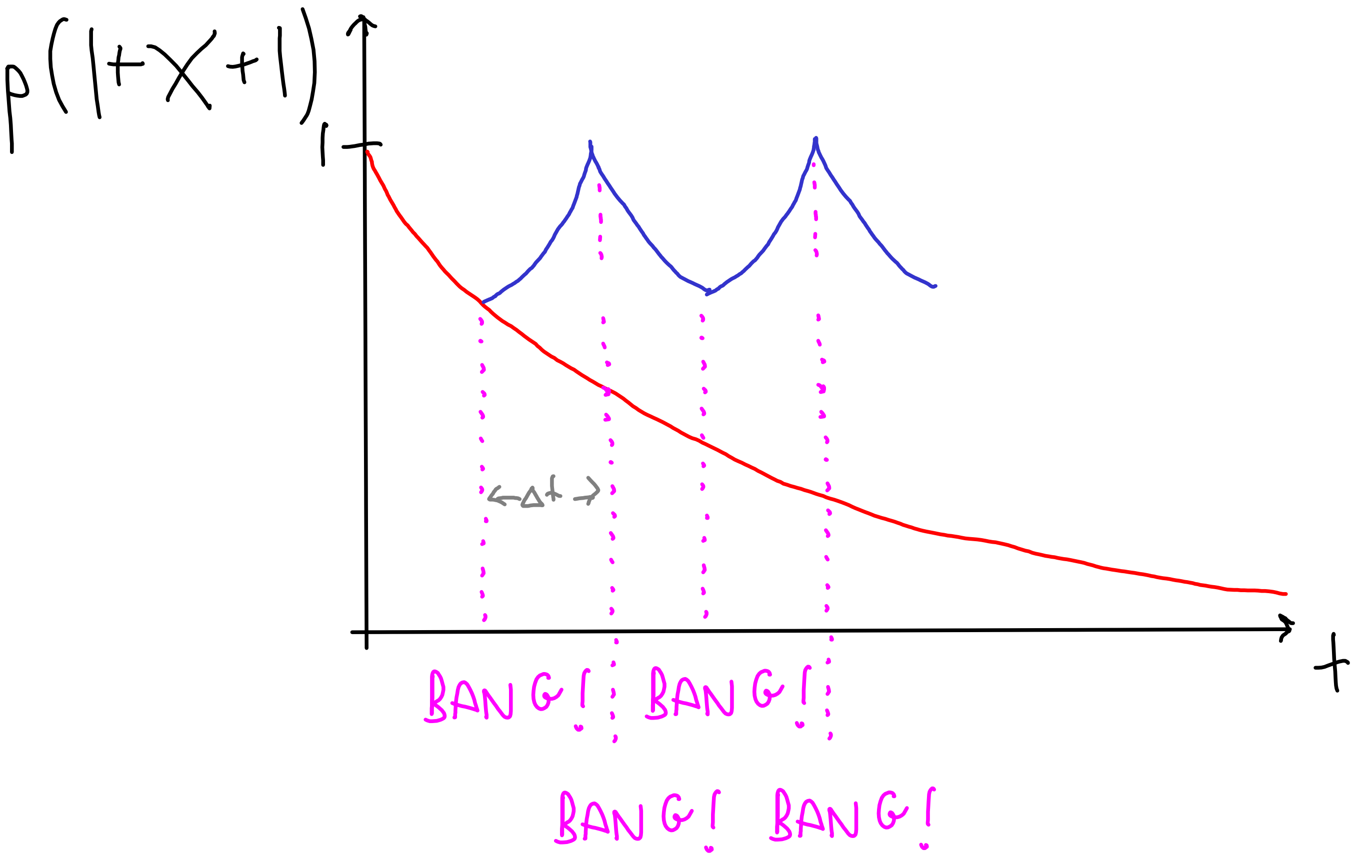

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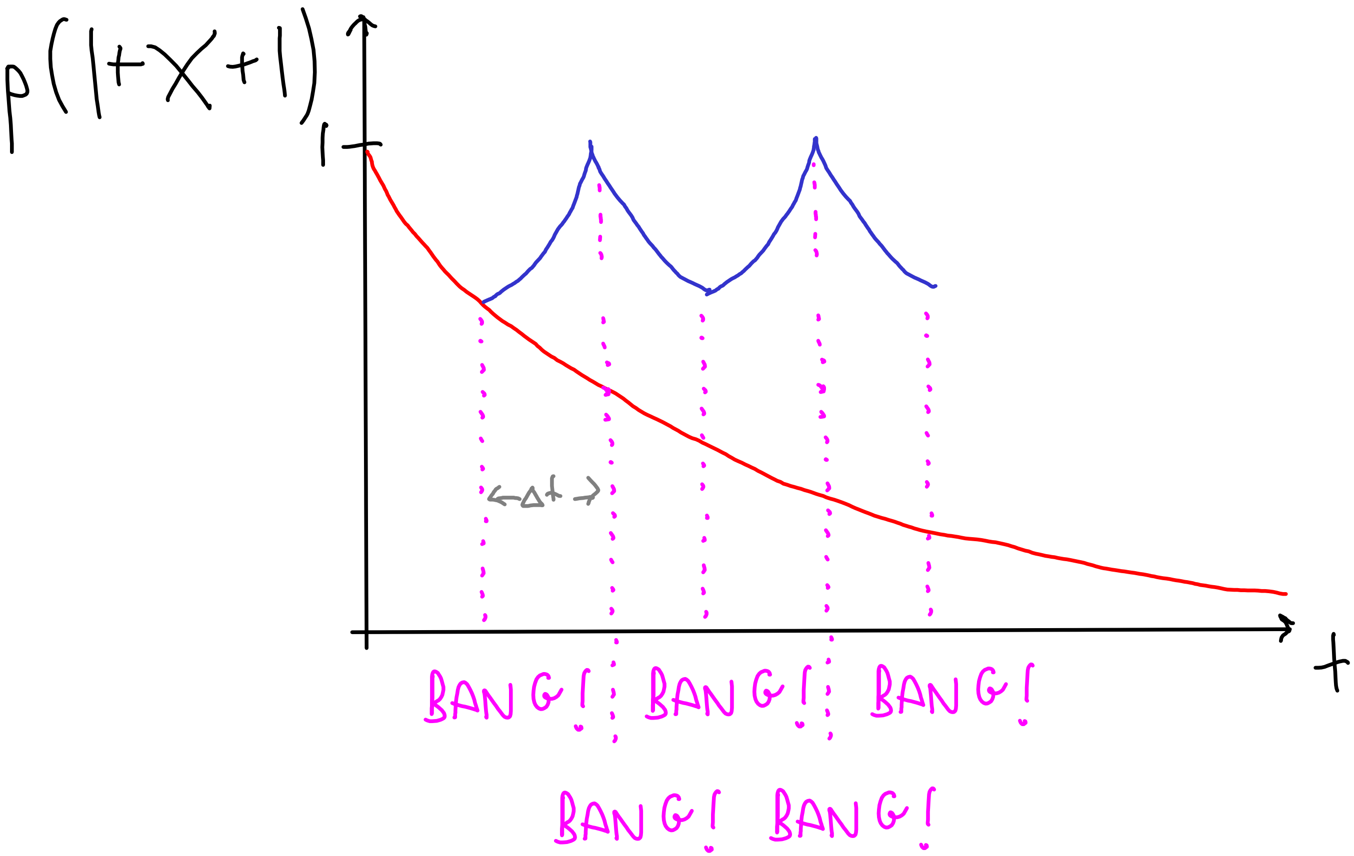

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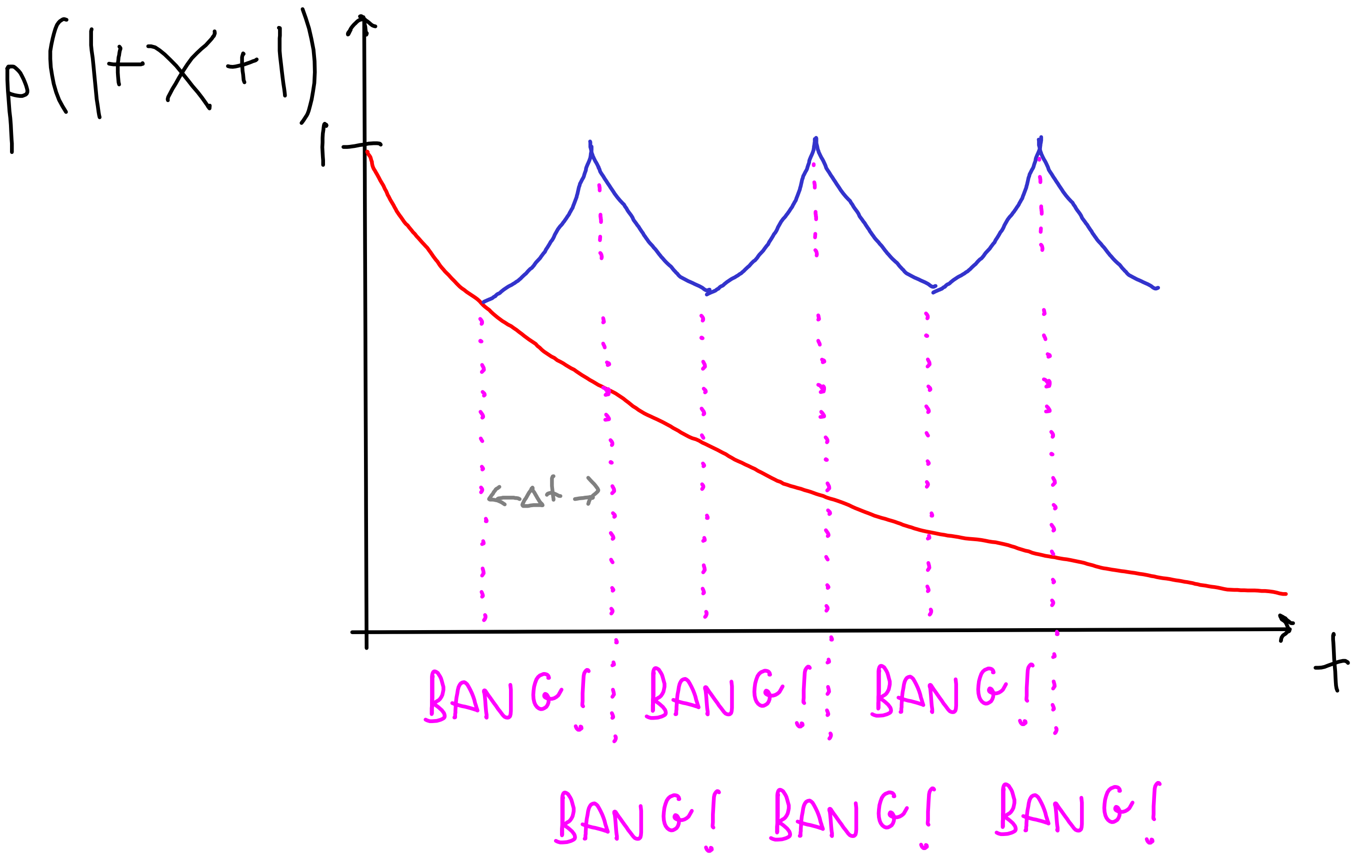

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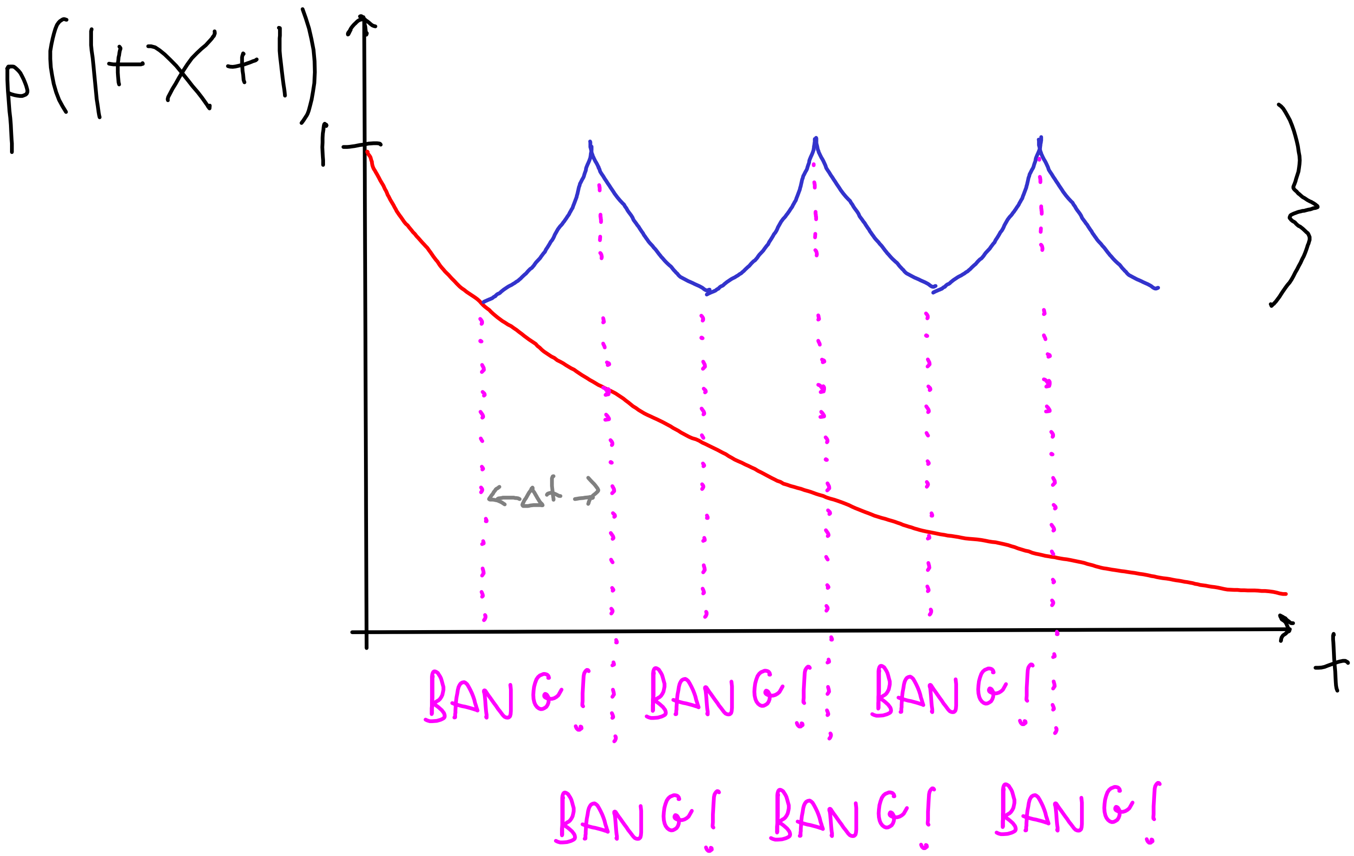

STABILIZES SYSTEM ON LEVEL DETERMINED BY Δt

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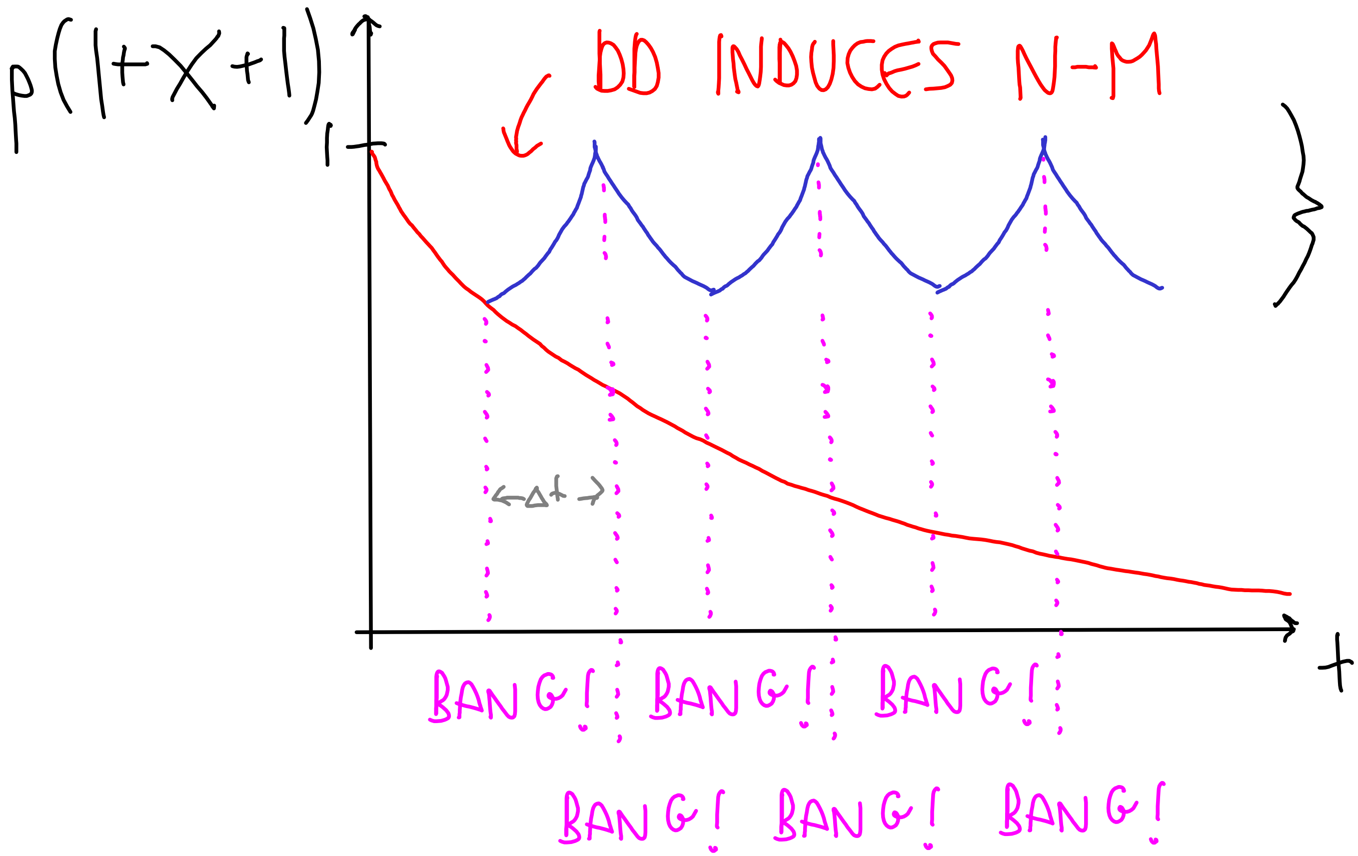

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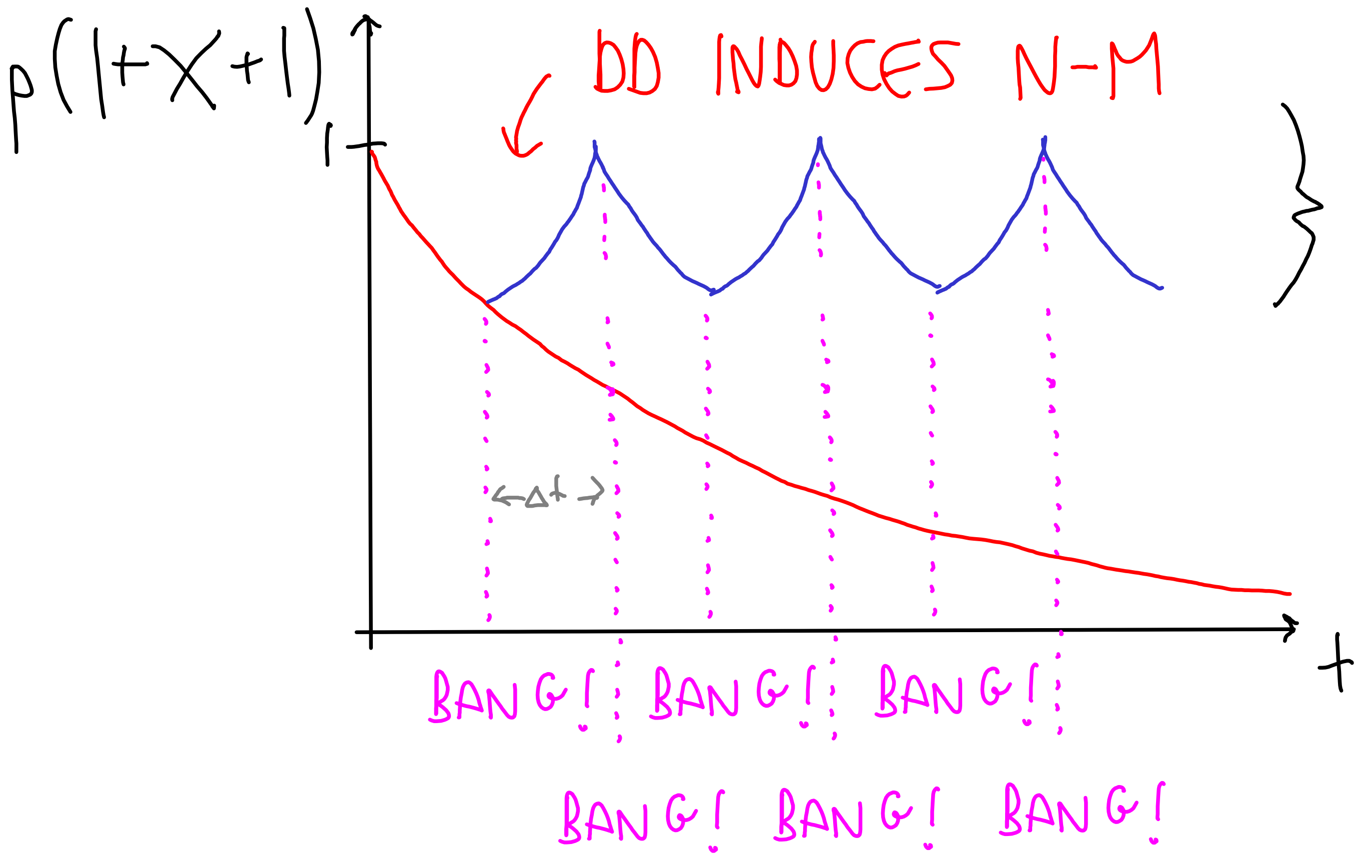

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SUCCESSFUL DECOUPLING OF SYSTEM WITH EXPONENTIAL DECAY

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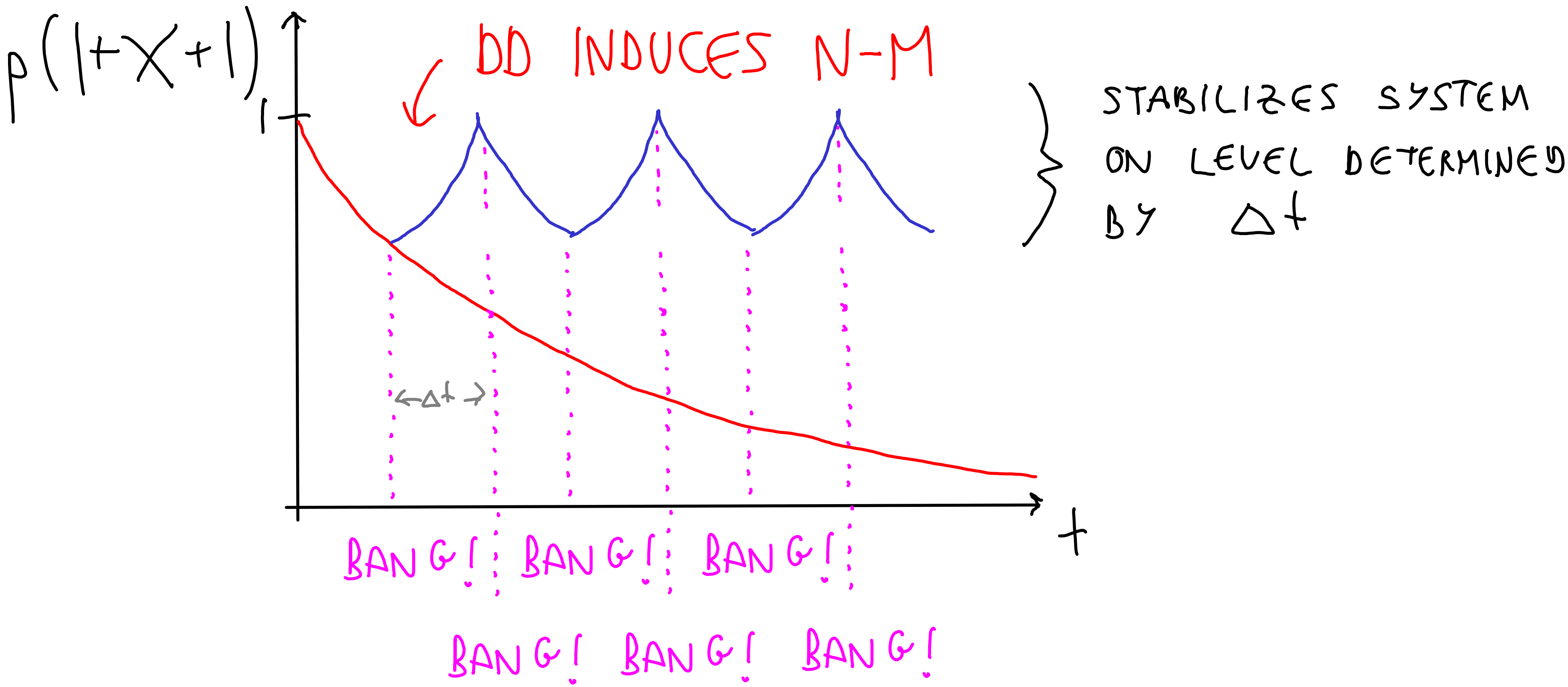

SUCCESSFUL DECOUPLING OF SYSTEM WITH EXPONENTIAL DECAY

NO N-M NEEDED

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LET'S SEE HOW DECOUPLING LOOKS LIKE:

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$$\begin{tikzcd} H \arrow[r, "DD"] & \mathbb{1}_{SB} \arrow[d, "tr_B"'] \\ & {} \end{tikzcd}$$

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GENERAL RESULTS (PRA 92 022102 '15)

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THM 1: NO GKLS-G CAN BE DECOUPLED

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REMARK: GENERALLY $H \to -H$ IMPOSSIBLE; USE GROUP BASED APPROACH

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REMARK: GENERALLY $H \to -H$ IMPOSSIBLE; USE GROUP BASED APPROACH; INDEPENDENT OF H

H DOES NOT COMMUTE WITH ITS ROTATED VERSION;

GENERAL RESULTS (PRA 92 022102 '15)

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SOLUTION: APPLY INCREASINGLY FAST DECOUPLING. IF IT WORKS: EXCLUDE COLLAPSE PARAMETER

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POTENTIAL TO GIVE STRONG EVIDENCE USING SINGLE QUBIT

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