Coherent driving from Markovian noise

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We derive the explicit commutation relations for the generators of Markovian superoperator evolution (a Lie semi-algebra), allowing the extension of Baker-Campbell-Hausdorff-type relations to general Markovian evolution, thus providing a novel tool for exploring the interaction of time-dependent coherent and incoherent evolutions. The result reveals a surprisingly rich set of behaviours, including the deformation, by coherent driving, of Markovian terms. Finally, we show that a fully coherent driving term can be generated by the interaction of time-separated Markovian noises.