

## **Applications of homotopy algebras: from Einstein = (Yang-Mills)<sup>2</sup> to holography**

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We begin with a heuristic introduction to homotopy algebras and their connections to quantum field theory and scattering amplitudes. We then delve into some applications of this perspective:

- colour-kinematics as witnessed by homotopy BV-box algebras;
- generalised (out-of-time-order) scattering amplitudes via adjusted deformation retract data;
- holography as homotopy and relative homotopy Lie algebras.