

Diagram illustrating the perturbative expansion of the gluon propagator in Quantum Chromodynamics (QCD). The expansion is shown as a sum of terms:

- Left side:** A tree-level gluon exchange between two quark lines. The vertices are labeled $\alpha_s(q^2)$. The internal gluon line is labeled q .
- Right side:** A series of higher-order corrections to the gluon propagator, represented by a sum of terms:
 - First term:** A tree-level gluon exchange (identical to the left side).
 - Second term:** A one-loop correction to the gluon propagator, featuring a gluon loop (represented by a circle with arrows) attached to the internal gluon line.
 - Third term:** A two-loop correction to the gluon propagator, featuring a gluon loop (represented by a circle with arrows) attached to the internal gluon line.
 - Fourth term:** A two-loop correction to the gluon propagator, featuring a ghost loop (represented by a circle with arrows) attached to the internal gluon line.
 - Fifth term:** A two-loop correction to the gluon propagator, featuring a gluon loop (represented by a circle with arrows) attached to the internal gluon line.
 - Ellipsis:** Indicated by $+$ followed by three dots ($+$...), representing higher-order terms in the expansion.