

EXERCISE IV
(JUNE 05 2013, TO BE HANDED IN JUNE 19 2013)

DYSON SCHWINGER EQUATIONS (KREIMER, SUMMER '13)

- 1.
Consider a theory with one type of unoriented edge, and vertices of valence $2 < k \leq k_0$, of order g^{k-2} . Write down the combinatorial Dyson–Schwinger equations for the $2 \leq m$ -point functions restricting to one-loop Hochschild one-cocycles. Determine $B_+^{1;m}$ in terms of graphs B_+^γ .
- 2.
What is the co-ideal structure? What happens for $k_0 \rightarrow \infty$?
- 3.
Read D. Kreimer and A. Velenich, *Field diffeomorphisms and the algebraic structure of perturbative expansions*, Lett. Math. Phys. **103** (2013) 171, [arXiv:1204.3790 [hep-th]]. Relate the paper to the above exercises.