



Contribution ID: 89

Type: **Contributed talk**

## Loop calculations in the null-plane causal perturbation theory

Thursday 2 December 2021 11:50 (15 minutes)

It is well known that light-front field theories suffer from the appearance of higher-order poles when treated in Feynman's approach to perturbative quantum field theory, originated in the non-local terms which arise in Feynman's propagators of some fields in light-front dynamics. The regularization of these terms is a delicate issue, as there are many prescriptions to do it. In null-plane causal perturbation theory, which is a rigorous approach to Heisenberg's S-matrix program in light-front dynamics, on the other hand, Feynman's propagators do not appear in loop calculations, but only the positive- and negative-frequency parts of the commutation distributions of the quantized fields. Consequently, no spurious poles appear in loop distributions, which are ultra-violet finite by construction, allowing to establish the equivalence with instant dynamics in a very clear way. We exemplify loop calculations in the causal approach in Yukawa's model as well as in QED.

### References

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**Session Classification:** Parallel Session