

## NEW PERSPECTIVES IN CONFORMAL FIELD THEORY AND GRAVITY

HELMHOLTZ

26 - 29 September 2023 DESY Hamburg, Germany



Contribution ID: 289

Type: **not specified**

## Symbol Alphabets from the Landau Singular Locus

*Thursday 28 September 2023 14:08 (18 minutes)*

We provide evidence through two loops, that rational letters of polylogarithmic Feynman integrals are captured by the Landau equations, when the latter are recast as a polynomial of the kinematic variables of the integral, known as the principal  $A$ -determinant. Focusing on one loop, we further show that all square-root letters may also be obtained, by re-factorizing the principal  $A$ -determinant with the help of Jacobi identities. We verify our findings by explicitly constructing canonical differential equations for the one-loop integrals in both odd and even dimensions of loop momenta, also finding agreement with earlier results in the literature for the latter case. At two loops, we find previously unknown solutions to the Landau equations that have non-trivial representation in the principal  $A$ -determinant. We argue that these new singularities are a part of the symbol alphabet at two loops.

### Summary

**Primary author:** TELLANDER, Felix (T (Stringtheory))

**Presenter:** TELLANDER, Felix (T (Stringtheory))

**Session Classification:** Parallel Session Thursday: Strings / Mathematical Physics III

**Track Classification:** Strings & Mathematical Physics