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Closed string amplitudes from single-valued correlation functions

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Closed string theory amplitudes display the remarkable property of presenting only single-valued multiple zeta in its low-energy expansion. At genus zero we show how this emerges by identifying the building blocks of any closed string amplitudes with the value at z=1 of single-valued correlation functions in two dimensional conformal field theory. We use the single-valuedness condition to determine uniquely the correlation function and determine the role of the momentum kernel in the singlevalued projection. We will present a similar construction at genus one and explain the appearance of a new class of modular functions so-called modular graph functions.

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