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# Novel Pade approximants and their application to Bjorken Sum Rule

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Novel variants of Padé Approximants (PAs) are formulated specifically to reproduce the exact hierarchy of renormalon behavior within the Borel complex plane. This approach is fundamentally motivated by the appearance of branch cuts from Operator Product Expansion (OPE) contributions in Quantum Chromodynamics (QCD), which replace the isolated poles characteristic of large-nf limits. To resolve dominant cuts, the D-Log Padé approximant evaluates the logarithm, converting branch points into simple poles whose residues correspond to critical exponents; standard PAs are then used. To resolve deeper analytical structures, Confluent Padé Approximants (CPAs) target subdominant confluent singularities at a known singular position. Applying these rational approximants to the Bjorken Sum Rule yields precise, model-independent predictions for uncalculated higher-order coefficients in the perturbative series, with particular emphasis on the normalization of the leading and first subleading renormalon contributions.

## Academic position of the presenting author

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