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Gamma values: regular and irregular

The values of the gamma function at rational numbers remain quite mysterious, one of the reasons being that, conjecturally, they are not periods in the usual sense of algebraic geometry. However, the theory of regular singular connections allows to show that suitable products of them are periods of Hodge structures with complex multiplication, as predicted by Gross and Deligne. To deal with single gamma values, one needs to consider irregular singular connections instead. After a brief exposition of my results on the Gross-Deligne conjecture, I will explain how irregular singular connections may shed some light on the arithmetic nature of these numbers.