

# The arithmetic function in 3 complex variables closely related to $L$ -functions of global fields

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## Abstract

In the joint series of work with Kohji Matsumoto, we studied value distribution problems for  $L'/L$  and  $\log L$ . In each case, the Fourier dual of the density measure has a “complexification”

$$\tilde{M}(s; z_1, z_2),$$

which is complex analytic in  $s, z_1, z_2$  on the domain where  $\operatorname{Re}(s) > 1/2$ . This function is so naturally related and seems to contain in its properties some keys to the corresponding value distribution problem.

On the other hand, I have been studying this function (first,  $L'/L$ -case, then more recently the  $\log L$ -case) from the analytic point of view. In this talk, some basic analytic properties of this function, including (i) the analytic continuation, (ii) the “Plancherel Volume”, ((iii) the zeros ), (iv) the behavior near  $s = 1/2, s = \infty$  are presented.