Erratum to the paper:

"Functional equation for partial zeta functions twisted by additive characters"

2016

We would like to point out a minor sign mistake that was discovered in the paper [1] while writing the paper [2]. We use below the notation of [1].

The factor

$$(-\mathrm{i})^{\mathrm{Tr}(p)}e^{-2\pi\,\mathrm{i}\,\mathrm{Tr}_{K/\mathbb{Q}}(ab)},$$

which appears in Equation (1.3) of [1], should be read instead as

$$(\mathrm{i})^{\mathrm{Tr}(p)}e^{-2\pi\,\mathrm{i}\,\mathrm{Tr}_{K/\mathbb{Q}}(ab)}.$$

The origin of this sign mistake occurred in equation (4.12) of loc. cit. while retranscribing equation (4.11). Taking into account this sign mistake, we obtain, the **now correct functional equation**,

$$(\mathrm{i})^{\mathrm{Tr}(p)}e^{-2\pi\,\mathrm{i}\,\mathrm{Tr}_{K/\mathbb{Q}}(ab)}\cdot Z_V(a,b,\omega_p,s)=Z_{V^*}(-b,a,\omega_p,1-s). \tag{1.1}$$

Note that, in the special case when $b=0$, the functional equation (1.1) agrees with the functional equation which appears in equation (10) of [4].

This difference of sign is consequential for the main result proved in [2] which are partly based on the (now correct) functional equation (1.1).

Remark 1.1. Since we have used the notation of [1] above it means that the expression $Z_V(a,b,\omega_p,s)$ above corresponds to the *completed zeta function* (involving the Euler factor at infinity). We would like to warn the reader that a change of notation has occured between the two papers [1] and [2]. In [2], the completed zeta function is now denoted by $\widehat{Z}_V(a,b,\omega_p,s)$ while the uncompleted zeta function is now denoted by $Z_V(a,b,\omega_p,s)$.

Remark 1.2. (Added in October 2024) The paper [1] has now been superseded by [3]. The zeta functions studied in [1] are now called "signature lattice zeta functions". The reader should also be warned that some of the notation used in [1] has now a slighly different meaning in [3]. For example, in [1], $Z_V(a,b,\omega_p,s)$ denoted the completed zeta function while in [3] it is now denoted by $\widehat{Z}_V(a,b,\omega_p,s)$.

References

[1] H. Chapdelaine. Functional equation for partial zeta functions twisted by additive characters. *Acta Arith.*, 136:213–228, 2009.

[2] H. Chapdelaine. GL_2 real analytic Eisenstein series twisted by parameter matrices and multiplicative integral quasi-characters. pages 1–148, 2016. https://arxiv.org/abs/1607.02910.

[3] H. Chapdelaine. Lattice zeta functions for number fields. pages 1–74, 2024. *submitted for publication.*

[4] C.L. Siegel. Über die Fourierschen Koeffizienten von Modulformen. *Nach. Akad. Wiss. Göttingen Math.-Phys. Nr. 3*, pages 15–56, 1970.