

Temperament Class Finding

Given

$$r, d \in \mathbb{N}; r < d \quad (1)$$

$$k \in \mathbb{R}, 0 < k < 1 \quad (2)$$

$$H \in \mathbb{R}^{d \times 1}, h_i > 0 \quad (3)$$

$$W = \begin{pmatrix} w_1 & & & 0 \\ & w_2 & & \\ & & \dots & \\ 0 & & & w_d \end{pmatrix}, w_i \in \mathbb{R} \quad (4)$$

find non-trivial

$$M \in \mathbb{Z}^{r \times d} \quad (5)$$

minimizing

$$\det \left[MW^2 M^T - k \frac{MW^2 H H^T W^2 M^T}{H^T W^2 H} \right] \quad (6)$$

(Different row-equivalent M are considered to be the same solution.)

For background, see

<http://x31eq.com/primerr.pdf>

and my current algorithms:

<http://x31eq.com/temper/>