parametrien eliminointi

parametrisointi polynomien avulla

input: $f_1, ..., f_n \in \mathbb{K}[t_1, ...t_m]$ // $f = (f_1, ..., f_n) : \mathbb{K}^m \to \mathbb{K}^n$
// $\mathrm{im}(f) \subset \mathbb{K}^n$
output: $h_1, ..., h_s \in \mathbb{K}[x_1, ...x_n]$ // $\mathrm{im}(f) \subset V(h_1, ..., h_s)$
// $V(h_1, ..., h_s)$ on pienin varieteetti joka sisältää $\mathrm{im}(f)$:n

$P = \emptyset$;
for $i = 1...n$ do

$p_i := x_i - f_i$; // $p_i \in \mathbb{K}[t_1, ..., t_m, x_1, ..., x_n]$
$P := P \cup \{p_i\}$; // $\mathcal{I} := \langle P \rangle \subset \mathbb{K}[t_1, ..., t_m, x_1, ..., x_n]$

endfor

$H := \mathrm{elim}(\langle P \rangle, m)$; // $\mathcal{I}_m := \langle H \rangle = \mathcal{I} \cap \mathbb{K}[x_1, ...x_n]$
// $H = \{h_1, ..., h_s\}$

parametrisointi rationaalifunktioitten avulla

input: $f_1, ..., f_n, g_1, ..., g_n \in \mathbb{K}[t_1, ...t_m]$ // $\varphi = (f_1/g_1, ..., f_n/g_n) : \mathbb{K}^m \to \mathbb{K}^n$
// $\mathrm{im}(\varphi) \subset \mathbb{K}^n$
output: $h_1, ..., h_s \in \mathbb{K}[x_1, ...x_n]$ // $\mathrm{im}(\varphi) \subset V(h_1, ..., h_s)$
// $V(h_1, ..., h_s)$ on pienin varieteetti joka sisältää $\mathrm{im}(\varphi)$:n

$P = \emptyset$; $p_0 := 1$;
for $i = 1...n$ do

$p_i := g_i x_i - f_i$; //
$P := P \cup \{p_i\}$; //
$p_0 := p_0 g_i$;

endfor

$p_0 := p_0 y - 1$;
$P := P \cup \{p_0\}$; // $\mathcal{I} := \langle P \rangle \subset \mathbb{K}[y, t_1, ..., t_m, x_1, ..., x_n]$
$H := \mathrm{elim}(\langle P \rangle, m+1)$; // $\mathcal{I}_{m+1} := \langle H \rangle = \mathcal{I} \cap \mathbb{K}[x_1, ...x_n]$
// $H = \{h_1, ..., h_s\}$