$$\underline{\gamma} = \begin{pmatrix} 1 \\ 2 \\ 4 \\ 5 \end{pmatrix} \qquad \begin{array}{c} \underline{z} \quad \underline{w} \quad \dots \\ \begin{array}{|c|c|c|c|} \hline z_1 & \cdot & \cdot & \cdot \\ \hline z_2 & \cdot & \cdot & \cdot \\ \hline z_3 & & & \\ \hline z_4 & & & \\ \hline \end{array} \end{array}$$

$$\mathbb{Z}^n \ni \gamma \mapsto \underline{v}(\underline{\gamma}) \in \mathbb{C}^n$$

$$\left(z_1^1 z_2^2 z_3^4 z_4^5 \;,\; \;,\; \;,\; \right) = v(\gamma)$$

$$\underline{z}^{\underline{\gamma}}$$

$$G(\gamma) := \frac{1}{n^2} \left| \langle \underline{1}, v(\gamma) \rangle \right|^2$$

* $G(\gamma) \in [0, 1]$
* $G(0) = \underline{1}$
* $\sum_{k=1}^{n} G(\gamma + e_k) = \underline{1}$

* $\langle v(\gamma_1), v(\gamma_2) \rangle = \langle \underline{1}, v(\gamma_2 - \gamma_1) \rangle$
* $v(0) = \underline{1} = (1, 1, \dots)$
* $\| v(\gamma) \|^2 = n$
* $\langle v(\gamma_1), v(\gamma_2) \rangle = \langle \underline{1}, v(\gamma_2 - \gamma_1) \rangle = 0$, ha $\gamma_2 - \gamma_1 \sim (1, -1, 0, 0 \dots)$

$$n^2 \sum_{k=1}^{n} G(\gamma + e_k) = \sum_{k=1}^{n} \left| \langle 1, V(\gamma + e_k) \rangle \right|^2 =$$

$$= \sum_{k=1}^{n} n \left| \left\langle \frac{V(-e_k)}{\sqrt{n}}, V(\gamma) \right\rangle \right|^2 = n \sum_{k=1}^{n} \cdots = n \|V(\gamma)\|^2 = n^2$$

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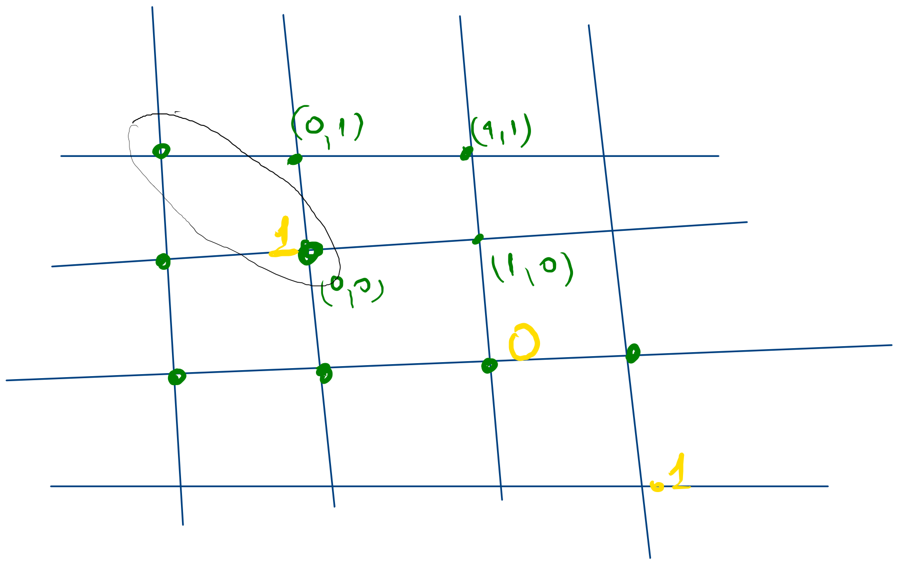
* $G(\gamma) \in [0,1]$
* $G(0) = 1$
* $\sum_{k=1}^{n} G(\gamma \pm e_k) = 1$



1) Elég: $\mathbb{Z}^n \rightsquigarrow \{\gamma \in \mathbb{Z}^n \mid \sum_{k=1}^{n} \gamma_k = 0\}$

2) $\bar{G}(\gamma) = \frac{1}{n!} \sum_{\sigma\ \mathrm{perm}} G_\sigma(\gamma) = G$ (σ permutáció alkalmazva γ-ra)

$n = 3$

$\bar{G}(0) = 1$ ✓

$\bar{G}(1, 0, -1) = 0$ ✓

$\bar{G}(2, -1, -1) = 1$

$(2, -1, -1, -1)$

$n = 4$

$\bar{G}(0) = 1$

$\bar{G}(1, 0, 0, -1) = 0$

$\bar{G}(2, 0, -1, -1) + \bar{G}(1, 1, -1, -1) = 1$

$\bar{G}(3, -1, -1, -1) + 3\,\bar{G}(2, 0, -1, -1) = 1$

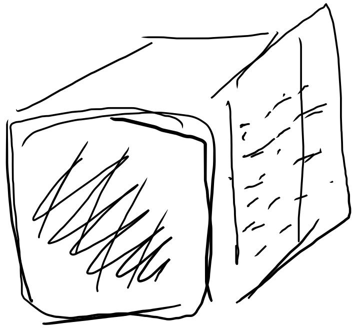
$\vdots$

$$\tilde{G}(\gamma) = \frac{1}{2}\left[\bar{G}(\gamma) + \bar{G}(-\gamma)\right]$$

Feladat:

$$\tilde{G}(5,0,0,0,-5) = \underline{1} \quad !!$$

$$\hookrightarrow \; G(-5,5,0,0,0) = \underline{1}$$



$\gamma \rightsquigarrow$ std. alak