

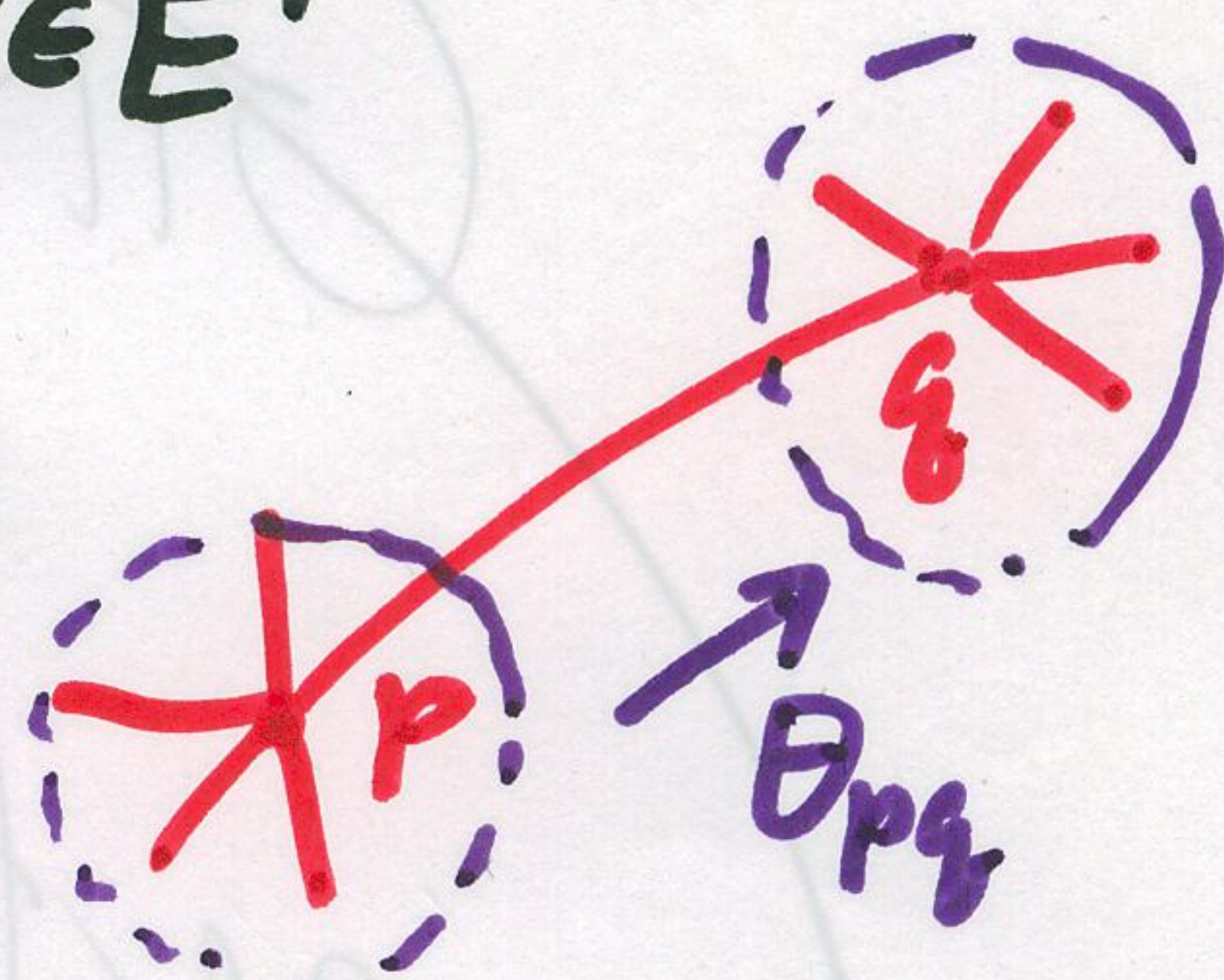
# 2. GKM-graph $\mathcal{G} = (\Gamma, \theta, \alpha)$

①  $\Gamma = (V^\Gamma, E^\Gamma)$ :  $n$ -valent graph

$\ast_p \} n$

② Connection  $\theta = \{ \theta_e \}_{e \in E^\Gamma}$

$$\theta_{pq}: E_p^\Gamma \xrightarrow[\text{onto}]{1:1} E_q^\Gamma \quad (e = pq)$$



③ axial function

$$\alpha: E^\Gamma \longrightarrow H_T^2(\text{pt}) \cong \mathbb{Z}^*$$

(i)  $\alpha(\bar{e}) = \pm \alpha(e)$   $p \xrightarrow{\alpha} \xleftarrow{\pm \alpha} q$  ( $e = pq, \bar{e} = qp$ )

(ii)  $\{ \alpha(e) \mid e \in E_p^\Gamma \}$ : pairwise linearly independent (p.l.i)

(iii)  $\alpha(\theta_e(e')) - \alpha(e') \equiv 0 \pmod{\alpha(e)}$ :

Congruence relation

