Reconstruction de ... à partir de leurs projections verticales et horizontales

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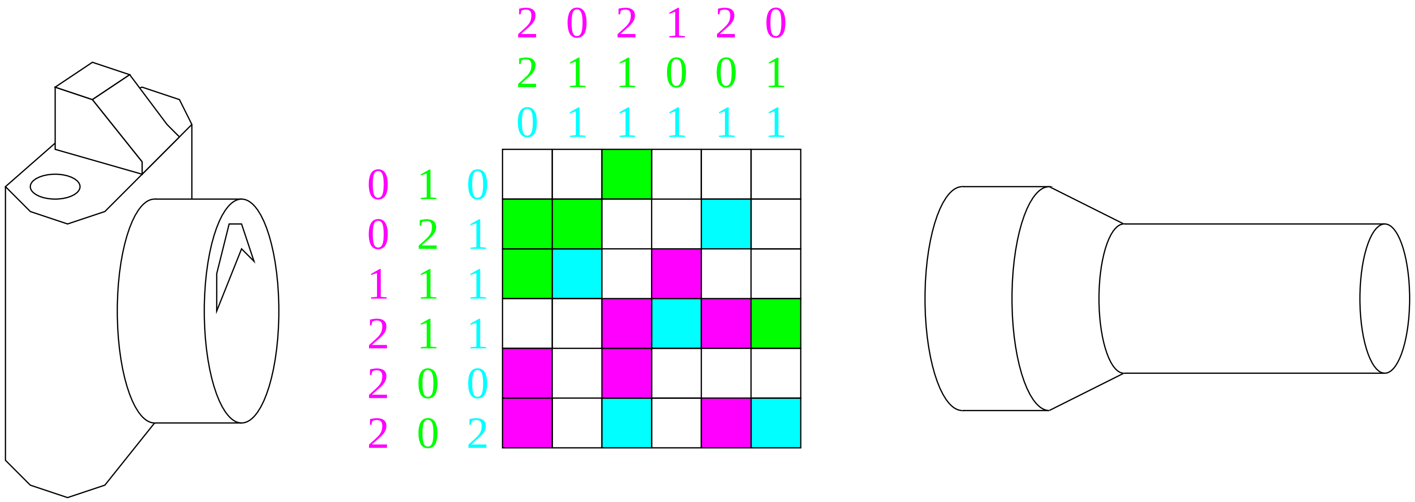
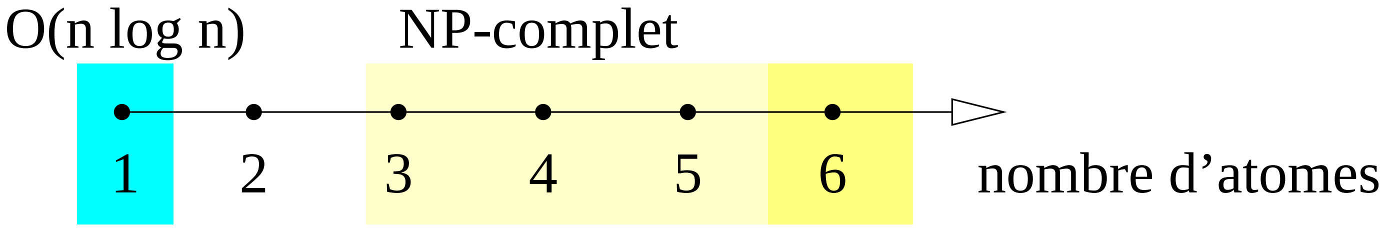
http://www.cs.huji.ac.il/~durr/Xray/

Le problème



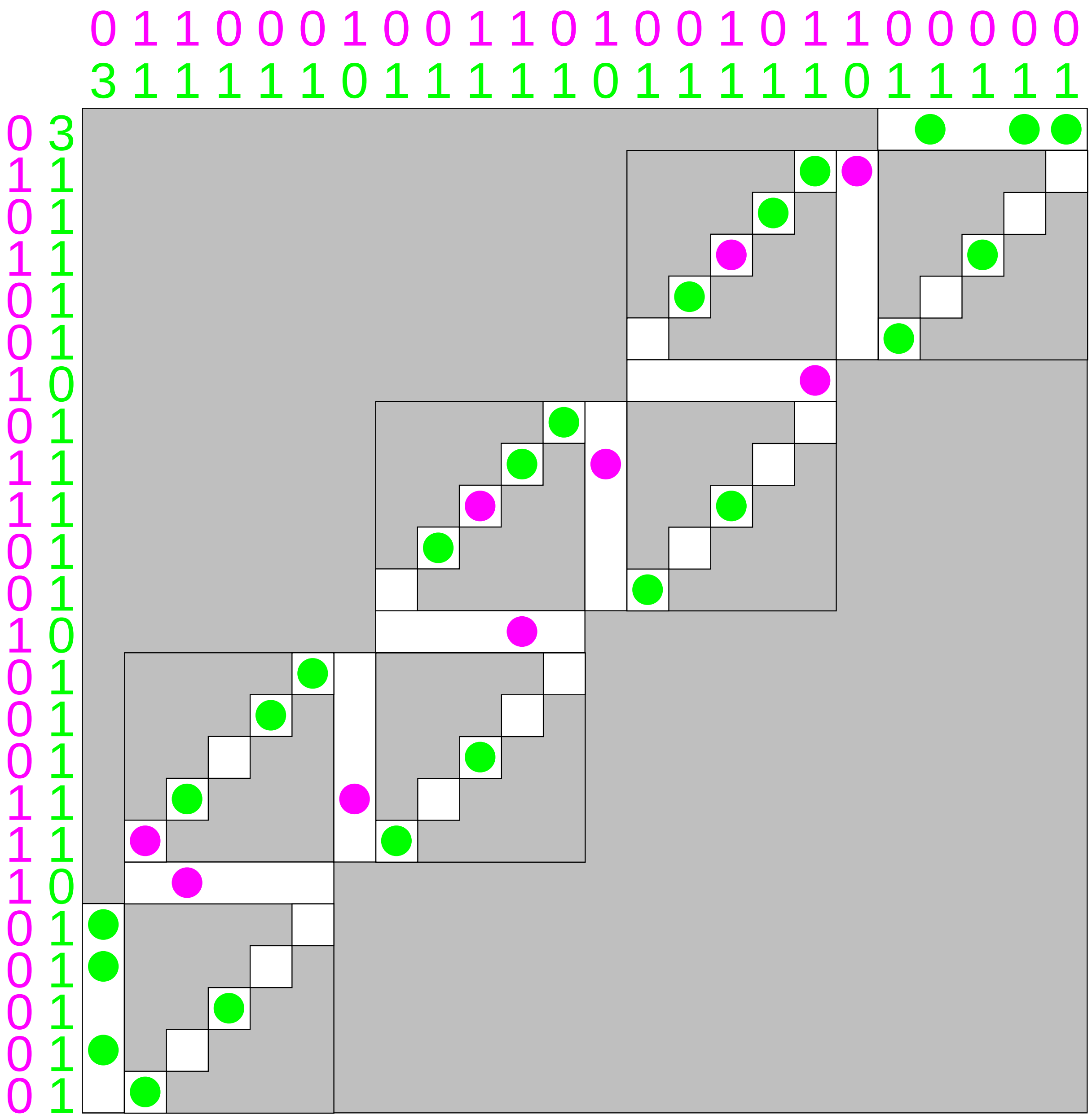


[Ryser'63] [Gardner..'96]

[Chrobak,Dürr'98]

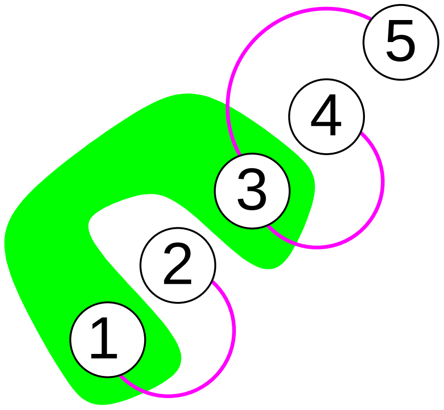
2 colorer une sous-grille

est NP-complet



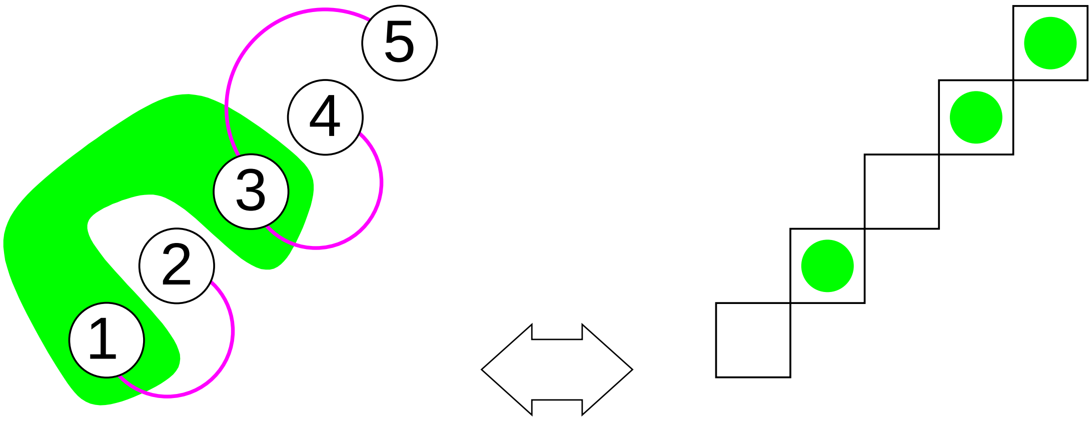
Réduction de VertexCover

entree $k, G(V, E)$

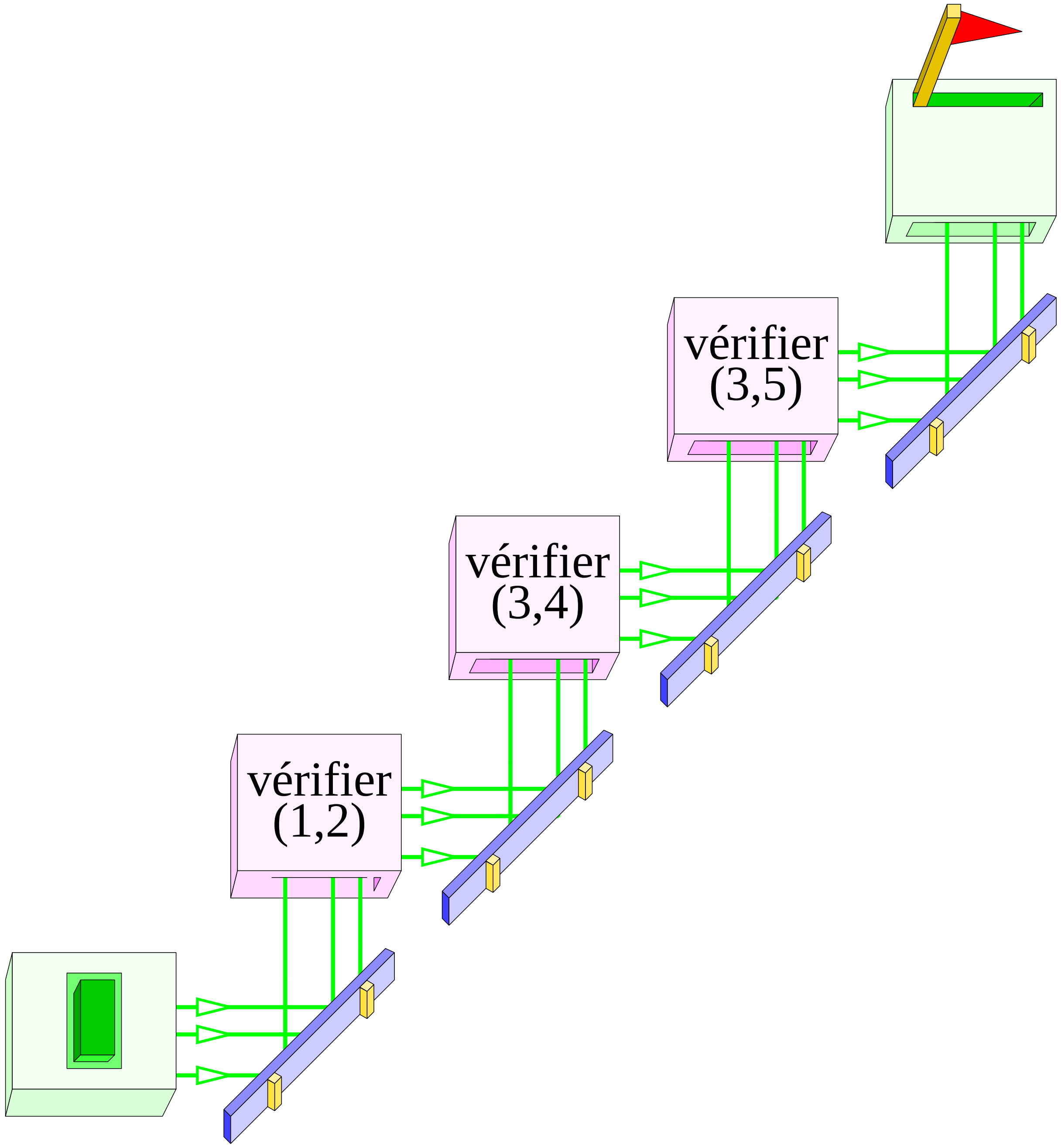


décider $\exists U \subseteq V, |U| = k, \forall (u, v) \in E : u \in U$ ou $v \in U$

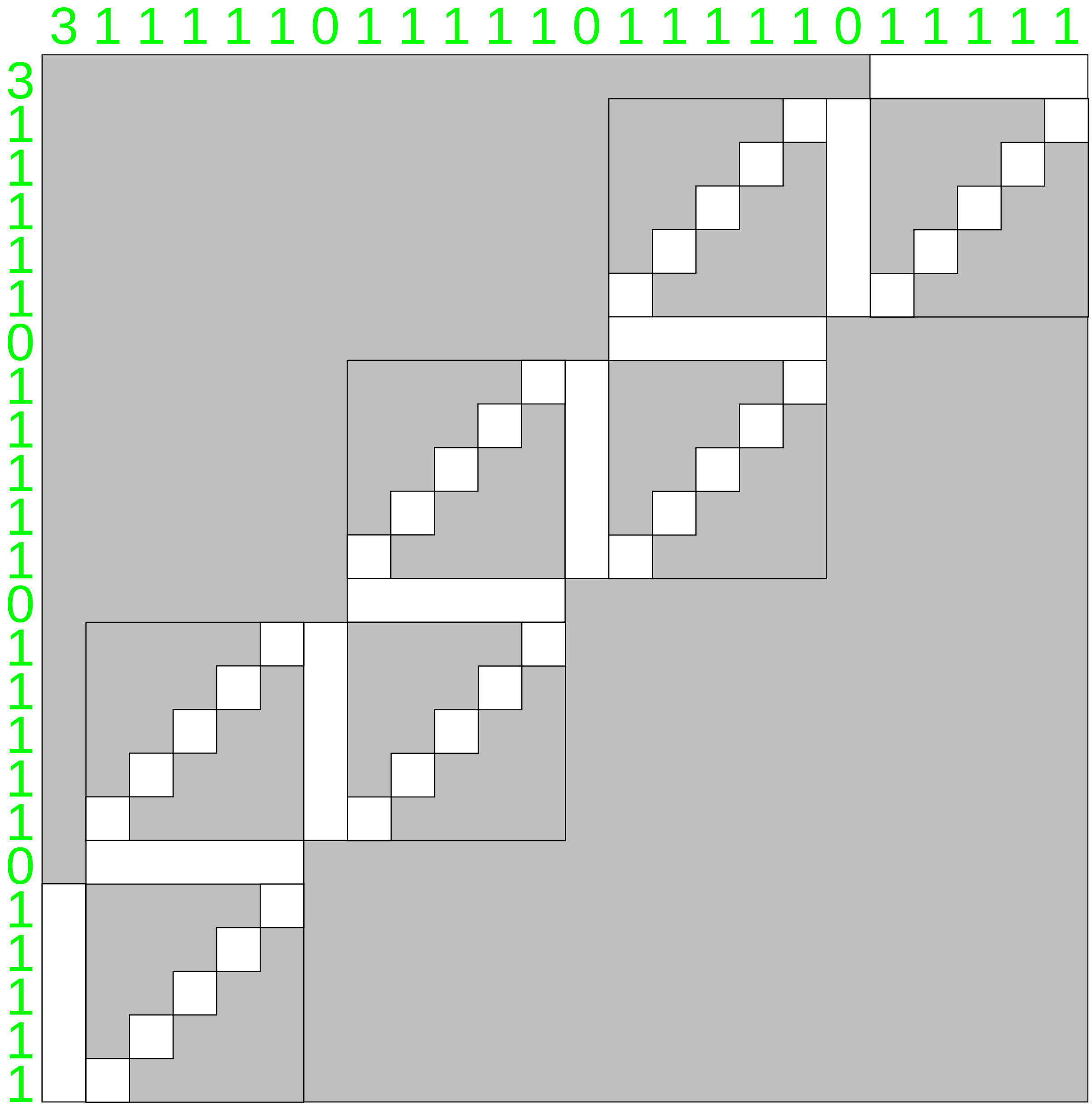
codage d'un ensemble de sommets

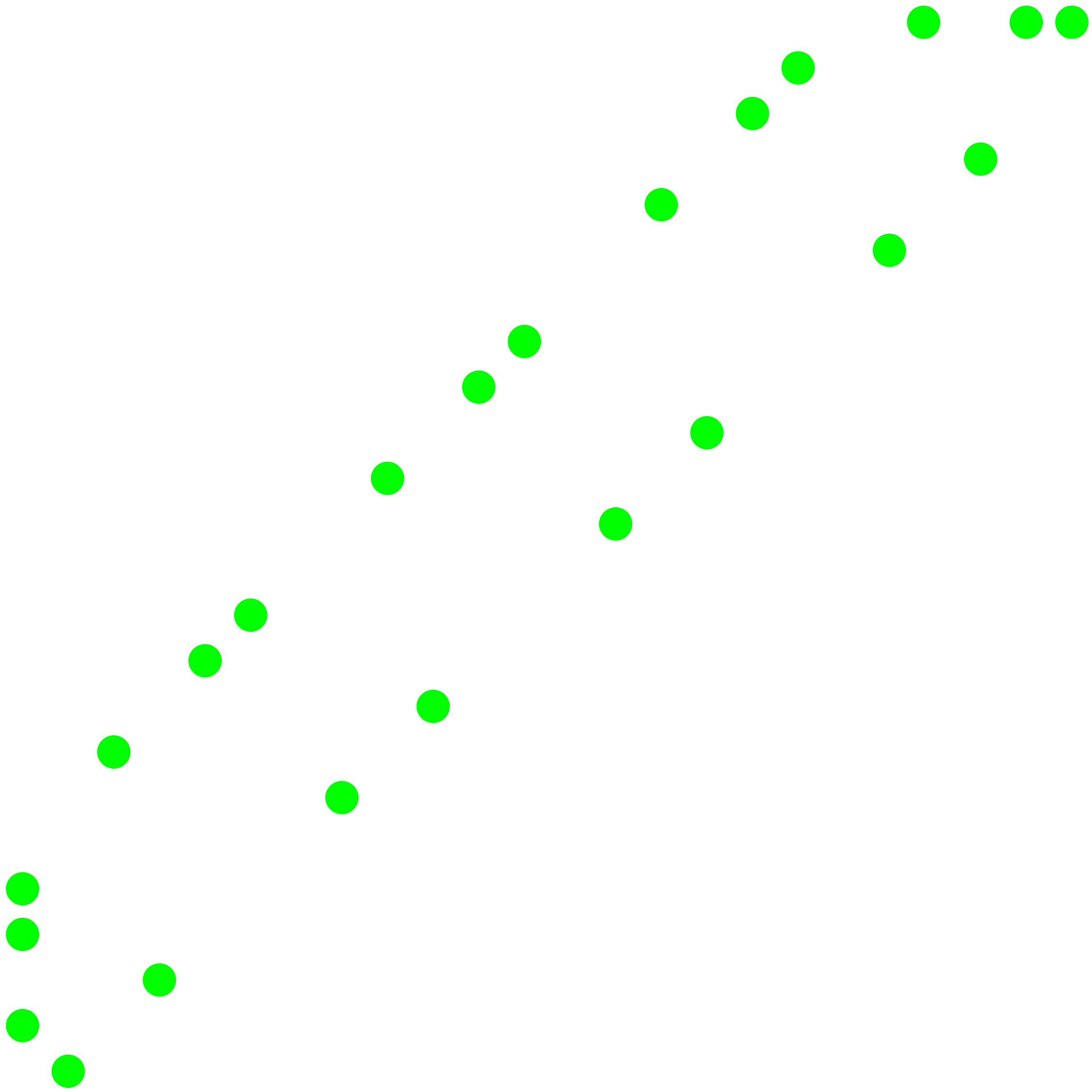


idée

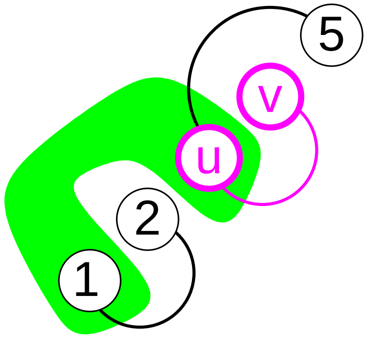


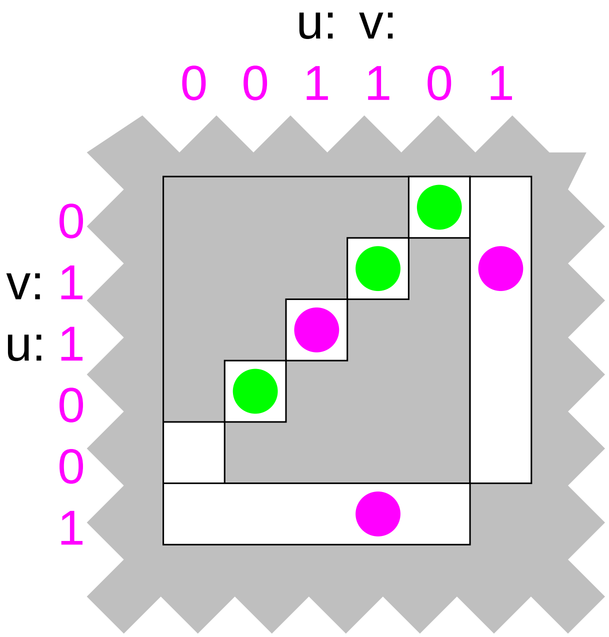
gadget: mirroir





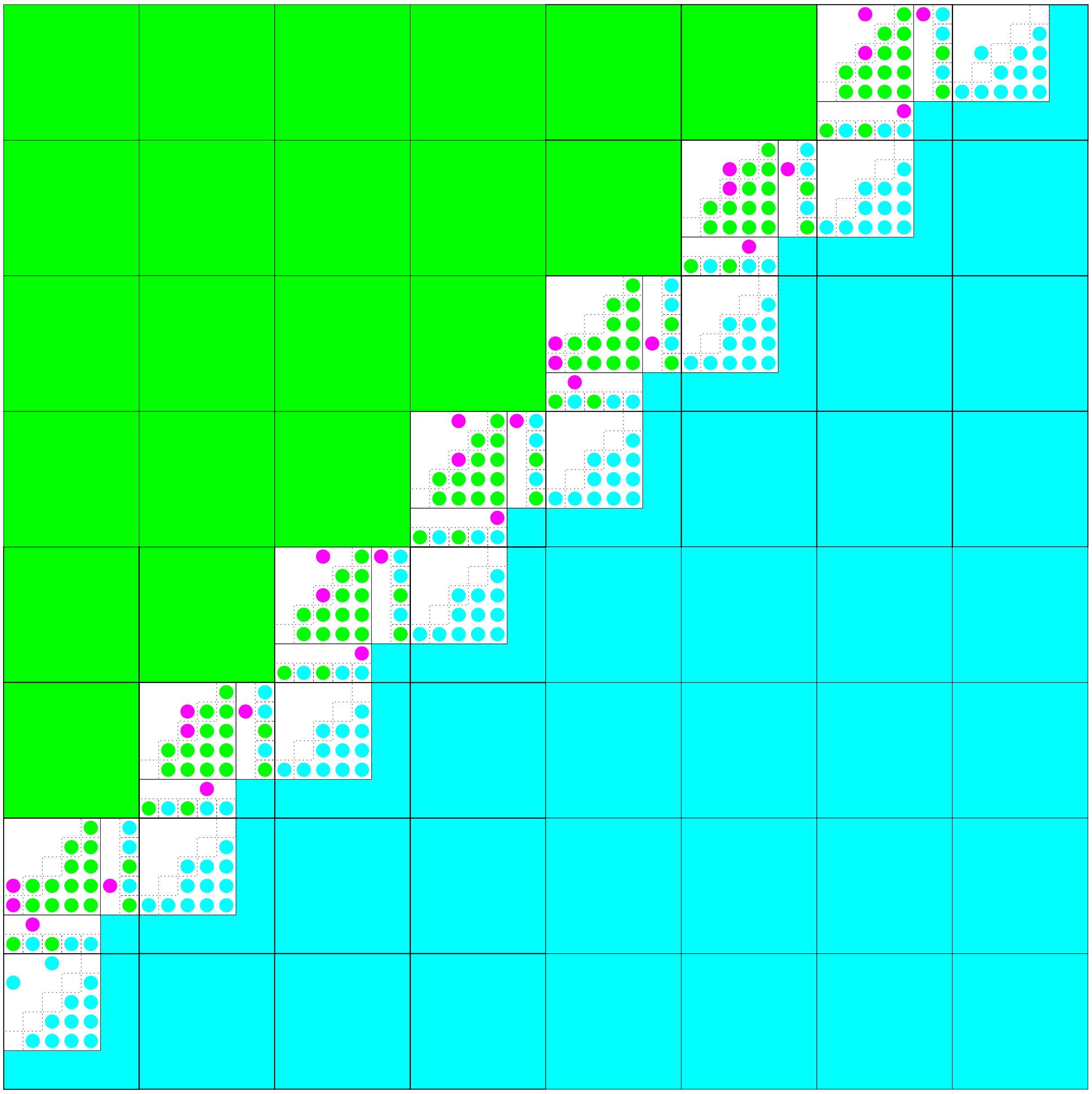
gadget: vérificateur d'arête





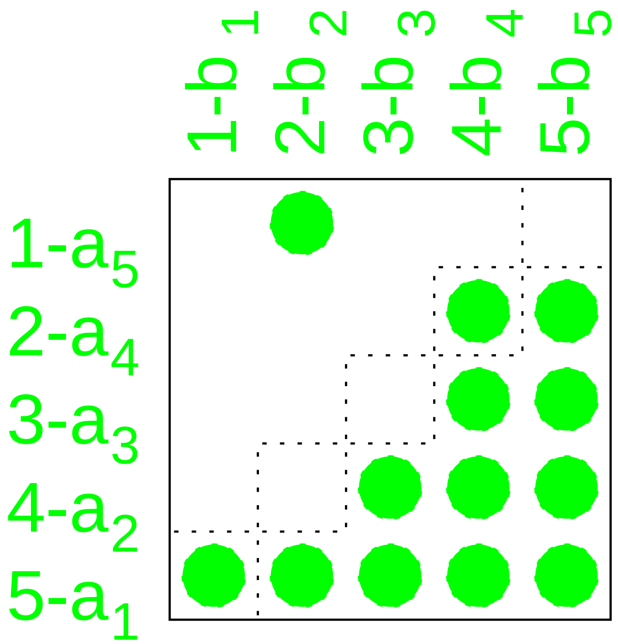
3 colorer une grille

est NP-complet



gadget: mirroir faible

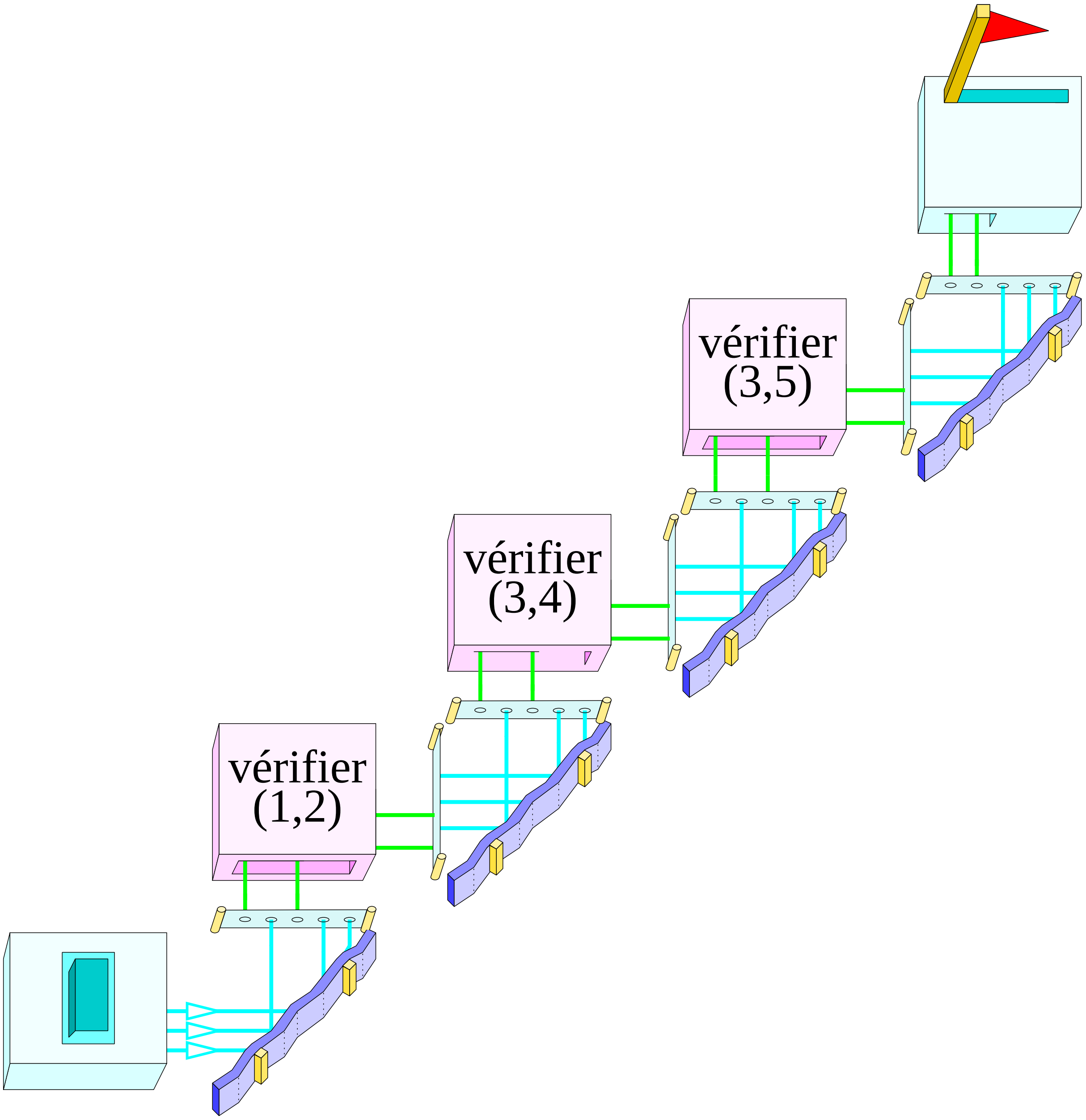
$a, b \in \{0,1\}^{|V|}$, $\sum a = \sum b$



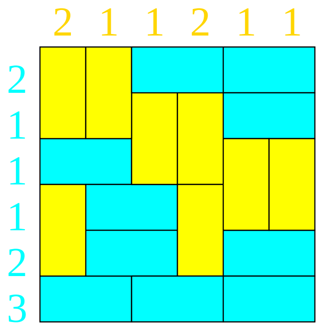
a une solution si et seulement si $a \preceq b$.

L'ordre partiel *de somme de préfixes* $\preceq$ a une profondeur polynomial seulement.

idée



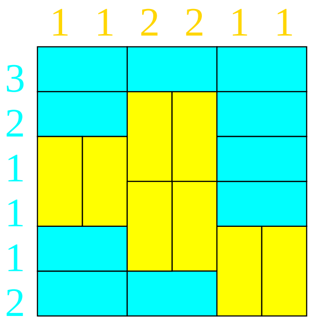
Reconstruire des pavages de dominos



[Goles,Rapaport,Rémila,Dürr'99]

projections colonnes identiques

reconstruction en $O(n^2)$



indép. par [Picouleau'99]

paver une sous-grille

NP-complet