[redacted]

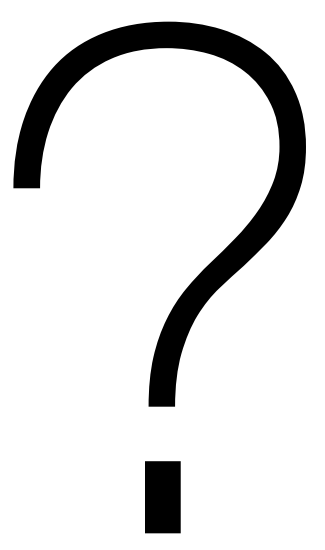
Relaxing the Objective

Structured OT

25

- So far: **deterministic** matches

- Want: **soft**, fractional assignments



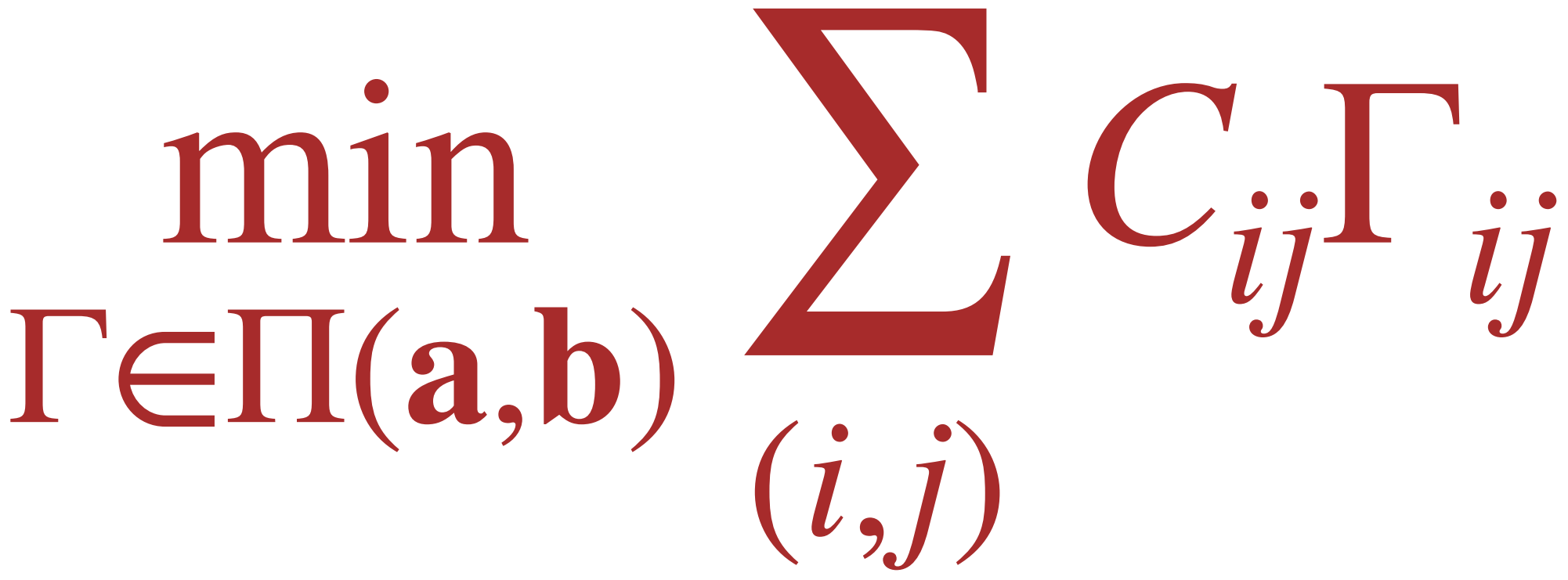
	Classic OT	Submodular OT

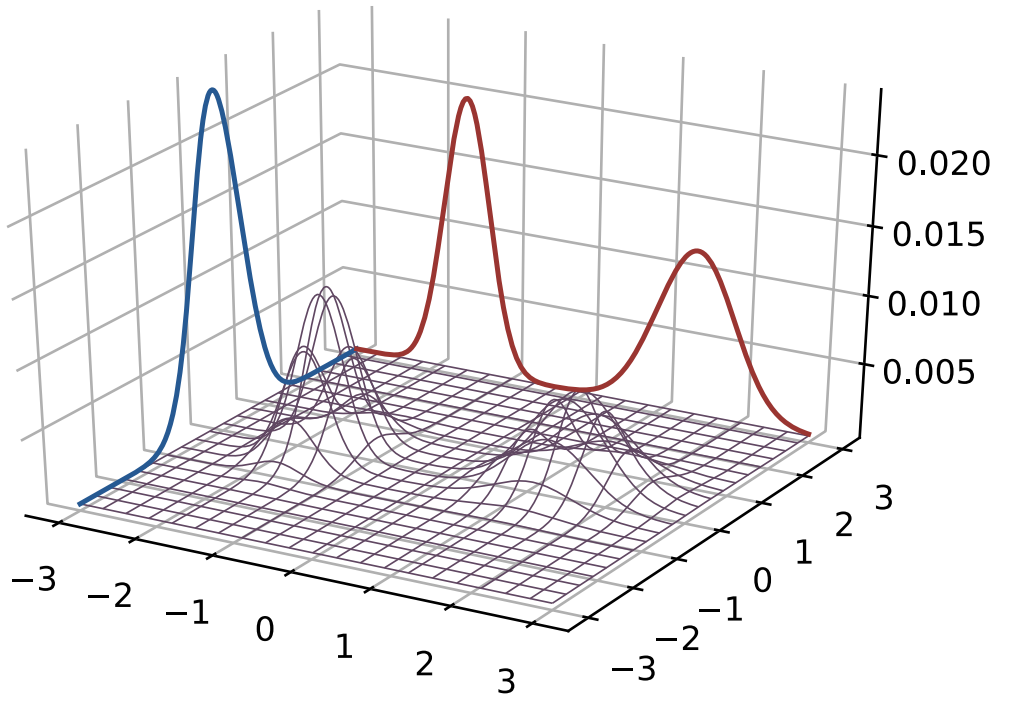
Relaxed Formulation

Strict Formulation

$$\min_{M} \sum_{(i,j)\in M} C_{ij}$$

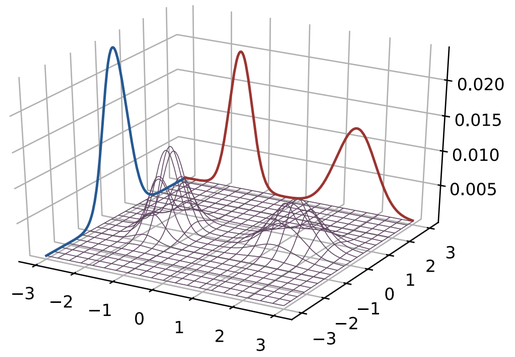
$$\min_{M} F(M)$$


min
Γ∈Π(a,b)
∑
(i,j)
C_ij Γ_ij


0.020
0.015
0.010
0.005
−3
−2
−1
0
1
2
3
−3
−2
−1
0
1
2
3

Structured OT
Relaxing the Objective

- So far: **deterministic** matches
- Want: **soft**, fractional assignments



	Classic OT	Submodular OT
Strict Formulation	$\min_{M} \sum_{(i,j)\in M} C_{ij}$	$\min_{M} F(M)$
Relaxed Formulation	$\min_{\Gamma\in\Pi(\mathbf{a},\mathbf{b})} \sum_{(i,j)} C_{ij}\Gamma_{ij}$	?

Submodularity
The Lovász Extension

- Extends the domain of F from $\{0,1\}^n$ to $[0,1]^n$