

Problem #1:

Neil: (comes from work with
J. Conway, A. Scholtz, C. Veitch)

$$\gamma_1, \gamma_2, \dots, \gamma_n \in \mathbb{Z}$$

$$\sum_{i=1}^n \left(\frac{2}{3}\right)^{\gamma_i} > 1 ?$$

I this in P?

$$\sum_{i=1}^n a_i \cdot 2^{\gamma_i} > 0 ?$$

$$\sum 2^{\gamma_i} > \sum 2^{\delta_i}$$

$$\sum_{i=1}^n 2^{\gamma_i} \cdot 3^{N-\gamma_i} > 3^N$$

#2: Alfonso

$n = \# \text{ vertices}$
TSP or

Mixed-integer formulation for ATSP
with $\text{poly}(n)$ inequalities
and $O(n)$ integer variables.

7 Formulation with $O(n \log n)$ binary variables
(by Stefan Weltge).

#3: AHMAD ABFI, $n \geq 3$

→ family of subsets of $\{1, \dots, n\}$; \mathcal{C} ,
s.t. no set of \mathcal{C} is contained in
another

→ I know that

$$c = b(c),$$

that is,

① \mathcal{C} doesn't have disjoint sets,

② \mathcal{C} does not admit a 2-coloring

(there is no partition $R \cup B = [n]$

s.t. every set of \mathcal{C} intersects

both R, B).

Conjecture: The polyhedron

$$\left\{ x \in \mathbb{R}_+^n : x(c) \geq 1 \quad \forall c \in \mathcal{C} \right\}$$

is fractional.

Examples:

$$\rightarrow \mathcal{C} = \{12, 23, 31\} \quad \left(\frac{1}{2}, \frac{1}{2}, \frac{1}{2}\right)$$

Tom Mc

Bilevel MF/MC

Leader: cut

Follower: flow

$$\text{Max val}(x) - \sum_{i \in N} x_i p_i$$

$|C| = 1$ Anuja pdyn
 $|C| = 2$ Dn + Chandrasekaran NPC wrong

Dissan + Matuschke: non-fixed $|C|$ NPH.