Ryerson → EGGY1
username: grascan
password: RU guest 8

Revolutionaries and Spies

(joint work with Dieter Mitsche)

J Bech (mid 90s)

r - revolutionaries (they go first)
s - spies

Goal: organize unguarded meeting of m revolutionaries

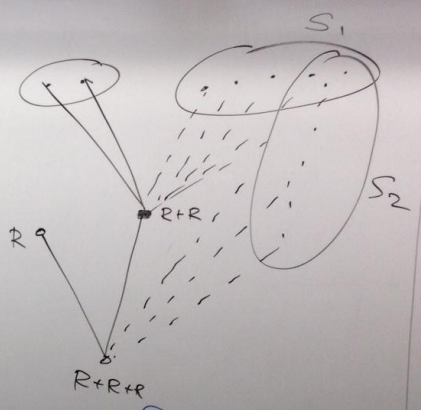
$$\rho(G, r, m) = \min \#\text{ of spies required to win}$$

$$\min\left\{|V|, \left\lfloor \frac{r}{m} \right\rfloor\right\} \leq \rho(G, r, m) \leq \min\{r-m+1, |V|\}$$

if G is $(2, s)$-e.c.

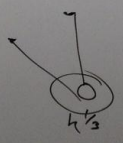
for $s = r - m$,

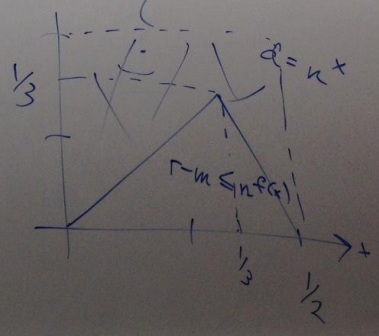
then $\rho(G, r, m) = r - m + 1$

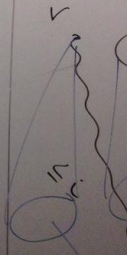


rand. graph $r - m \leq 2.99 \log n$

$d = pn \gg n^{2/3}$







S_1

S_2

$(1, \varepsilon S, S)$-e.c.

v

εS

S

2 teams
of super-spies

$(1, \varepsilon S, S)_i$-e.c.

v

εS

S

$\leq c_i$

$\leq c_i$

$\geq c_{i+1}$

i

i

$\frac{r}{m}$
regular-spies

$d = \kappa t$

$\leq \kappa t^{c_i}$

t

$\frac{1}{3}$

1

Upper bound: $\rho(G, r, m) \leq c \mathbb{L}n\, n + \frac{r}{m}$

2 teams
of super-spies

$c_1 \mathbb{L}n$

A

S'

S

$|S| \leq c_2 \mathbb{L}n$

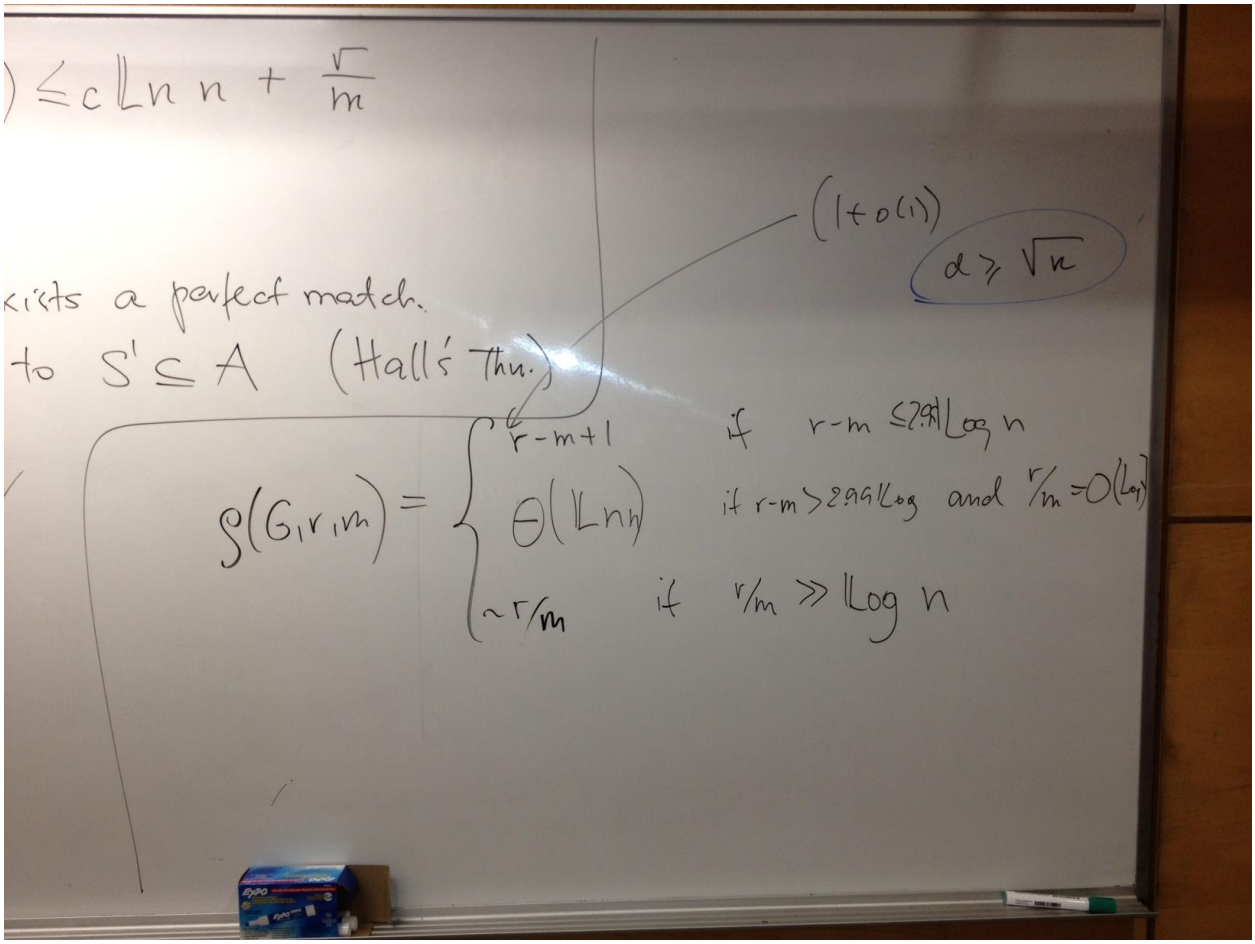
there exists a perfect match
from S to $S' \subseteq A$ (Hall's Thm

$\frac{r}{m}$
regular-spies

M

small V

$$\rho(G, r, m) = \begin{cases} r \\ \epsilon \\ \sim r \end{cases}$$


$\leq c \ln n + \frac{\sqrt{}}{m}$
$(1+o(1))$
$d \geq \sqrt{n}$
xists a perfect match.
to $S' \subseteq A$ (Hall's Thu.)
$s(G,r,m) = \begin{cases} r-m+1 & \text{if } r-m \leq 2.95 \log n \\ \Theta(\ln n) & \text{if } r-m > 2.95 \log \text{ and } r/m = O(\log) \\ \sim r/m & \text{if } r/m \gg \log n \end{cases}$