

Sep 10

# Gale-Shapley algorithm

- ① Initially all men/women are free
- ① In a loop: in book: men propose  
A free woman proposes to a man
- ② You have  $n$  matched pairs

Initial state: All  $n$  men +  $n$  women are free

- ① Let  $w$  be a free woman
- Q: Which man  $m$  should  $w$  propose to?
- A: The man  $m$  on top of  $L_w$ .  
→  $w$  proposes to  $m$
- Q2: What should  $m$  do?
- Accept?
- Reject?

# Running Example

$n=2$ ;  $M = \{BP, BBT\}$ ;  $W = \{JA, AJ\}$

$L_{AJ}: BBT > BP$  |  $L_{BBP}: AJ > JA$   
 $L_{JA}: BP > BBT$  |  $L_{BBT}: JA > AJ$

AJ	JA	BP	BBT
Free	Free	Free	Free

- Q: Who should JA propose to?
- A: BP
- (~~AJ~~<sup>JA</sup> → BP) proposal
- Q: What should BP do?
- Accept?
- Reject?