Load in the data, which contains

- min_energies : num_graphs rows, num_trials columns
- tts

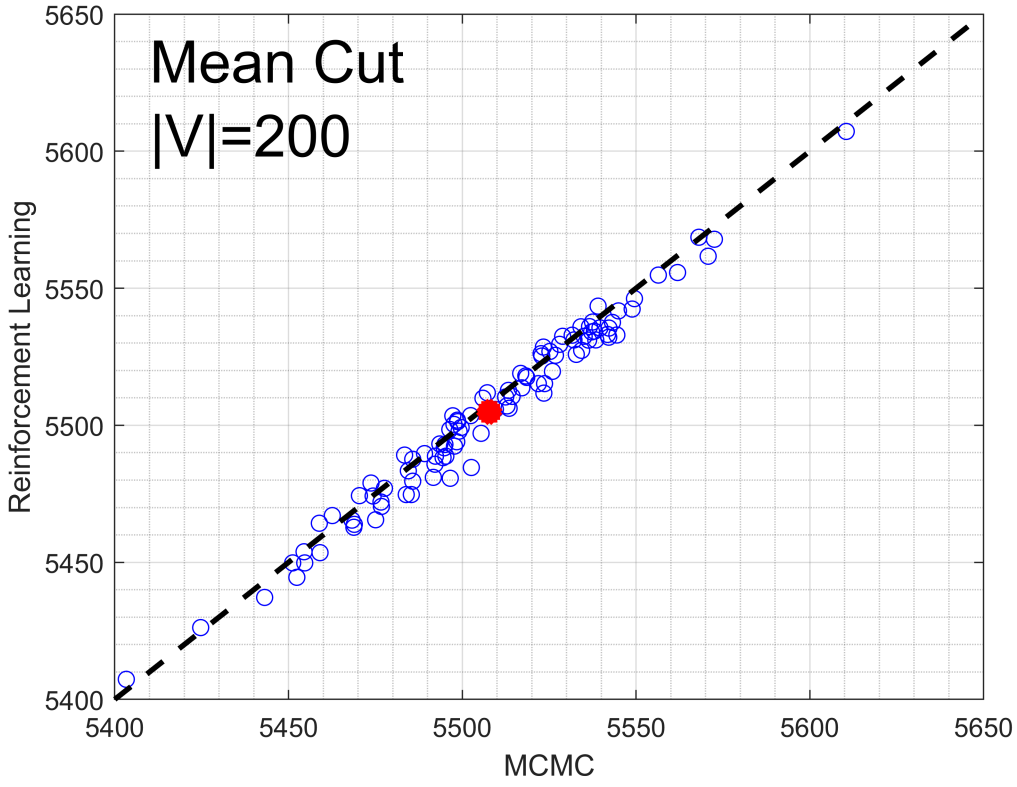
200 node plots (100 graphs)

network is trained on 200 node plots

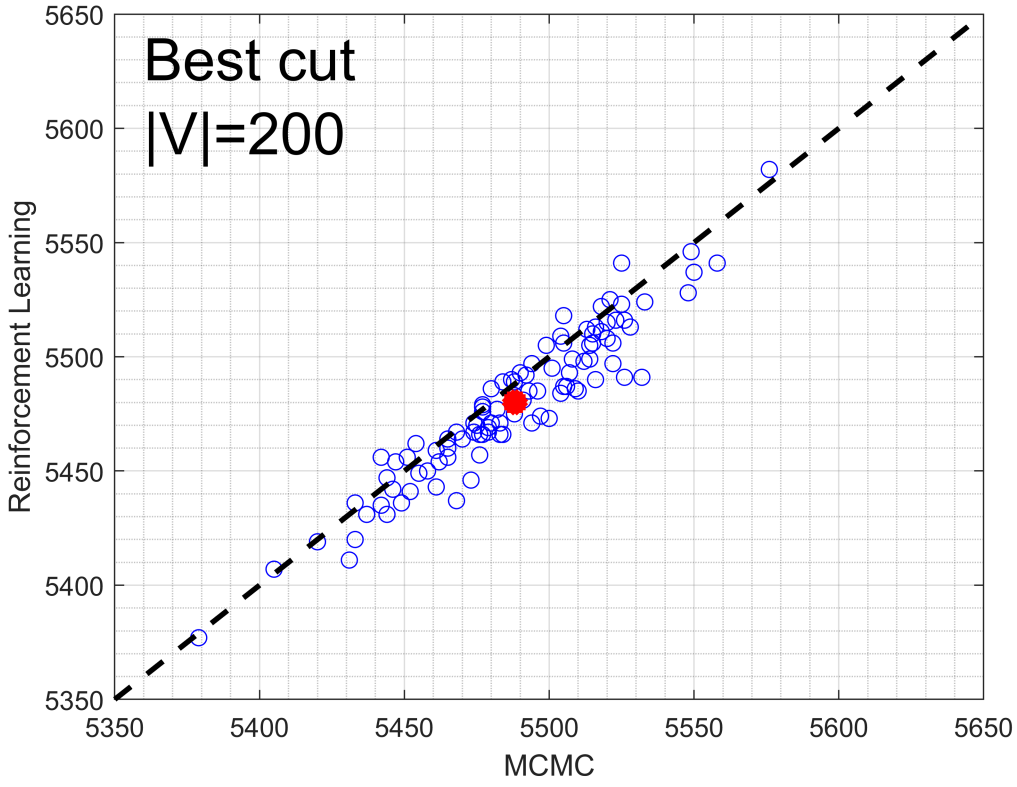
```
clearvars
load("sfm_100graphs_200nodes_15runs_1e5prop.mat")
min_energies = min_energies * -1;
mean_vals_sfm = mean(min_energies, 2);
plus_std_sfm = mean_vals_sfm + std(min_energies,0,2);
minus_std_sfm = mean_vals_sfm - std(min_energies,0,2);
min_vals_sfm = min(min_energies, [], 2);

load("rl_100graphs_200nodes_15runs.mat")
mean_vals_rl = mean(min_energies, 2);
plus_std_rl = mean_vals_rl + std(min_energies,0,2);
minus_std_rl = mean_vals_rl - std(min_energies,0,2);
min_vals_rl = min(min_energies, [], 2);


figure
grid on
grid minor
hold on
box on
scatter(mean_vals_sfm, mean_vals_rl,'b')
plot([5400:1:5650],[5400:1:5650], 'k--', 'linewidth', 2)
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Mean Cut','|V|=200'};
text(5410, 5620, str, 'FontSize', 22);
x = mean(mean_vals_sfm);
y = mean(mean_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)
hold off
```




```
figure
grid on
grid minor
hold on
box on
scatter(min_vals_sfm, min_vals_rl,'b')
plot([5350:1:5650],[5350:1:5650], 'k--', 'linewidth', 2)
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Best cut','|V|=200'};
text(5360, 5615, str, 'FontSize', 22);
x = mean(min_vals_sfm);
y = mean(min_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)
hold off
```



300 node plots (20 graphs)

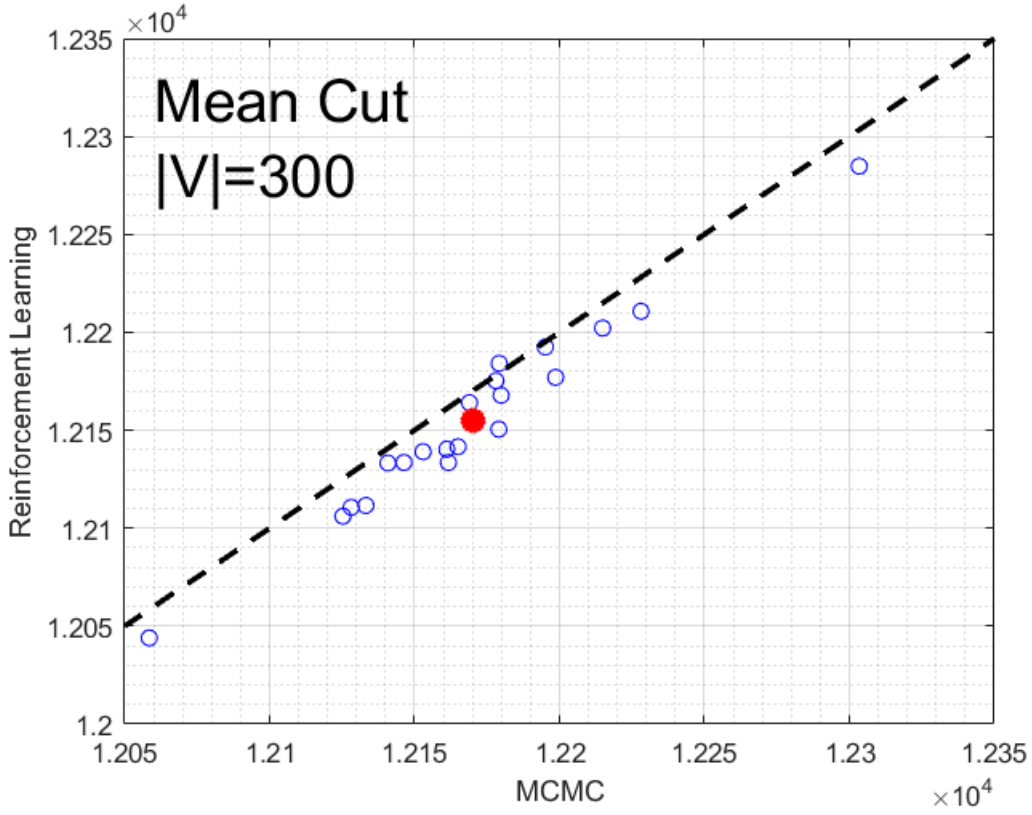
network trained on 200 node plots

```
clearvars
load("sfm_20graphs_300nodes_15runs_1e5prop.mat")
min_energies = min_energies * -1;
mean_vals_sfm = mean(min_energies, 2);
plus_std_sfm = mean_vals_sfm + std(min_energies,0,2);
minus_std_sfm = mean_vals_sfm - std(min_energies,0,2);
min_vals_sfm = min(min_energies, [], 2);

load("rl_20graphs_300nodes_15runs.mat")
mean_vals_rl = mean(min_energies, 2);
plus_std_rl = mean_vals_rl + std(min_energies,0,2);
minus_std_rl = mean_vals_rl - std(min_energies,0,2);
min_vals_rl = min(min_energies, [], 2);

figure
grid on
grid minor
hold on
```

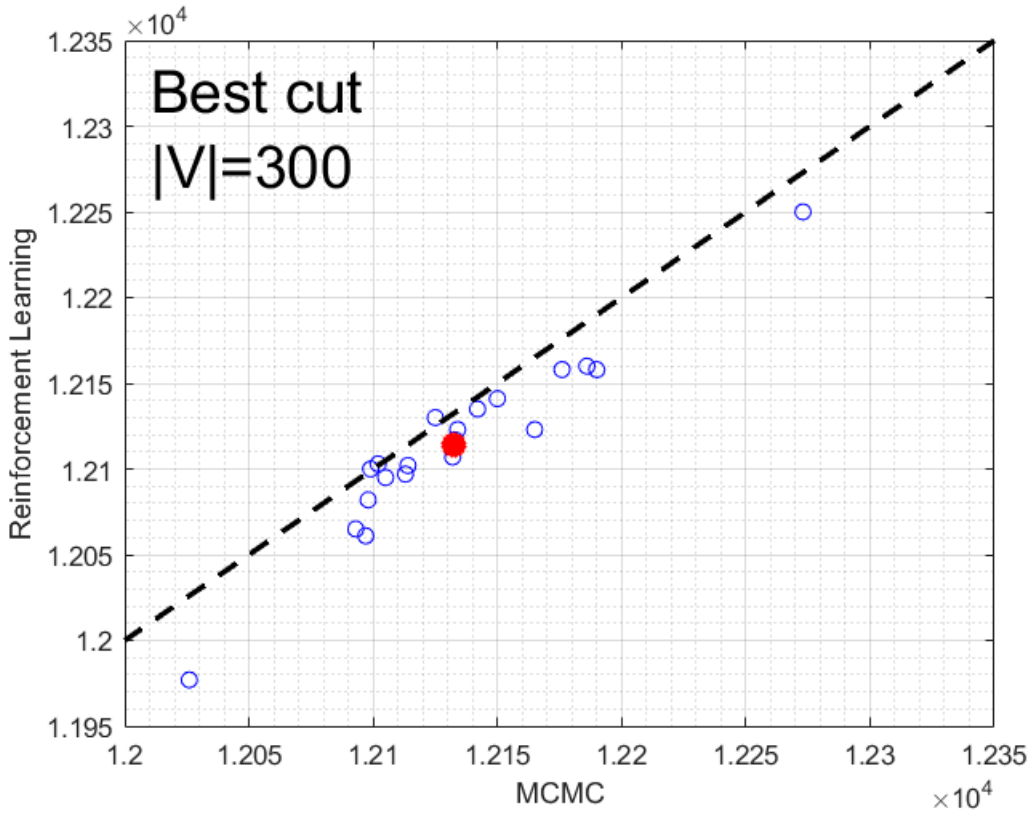
```
box on
scatter(mean_vals_sfm, mean_vals_rl,'b')
s = 12050;
f = 12350;
plot([s:1:f],[s:1:f], 'k--', 'linewidth', 2)
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Mean Cut','|V|=300'};
text(12060, 12300, str, 'FontSize', 22);
x = mean(mean_vals_sfm);
y = mean(mean_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)
hold off
```




```
figure
grid on
grid minor
hold on
box on
scatter(min_vals_sfm, min_vals_rl,'b')
s = 12000;
f = 12350;
plot([s:1:f],[s:1:f], 'k--', 'linewidth', 2)
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Best cut','|V|=300'};
text(12010, 12300, str, 'FontSize', 22);
```

```
x = mean(min_vals_sfm);
y = mean(min_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)

hold off
```

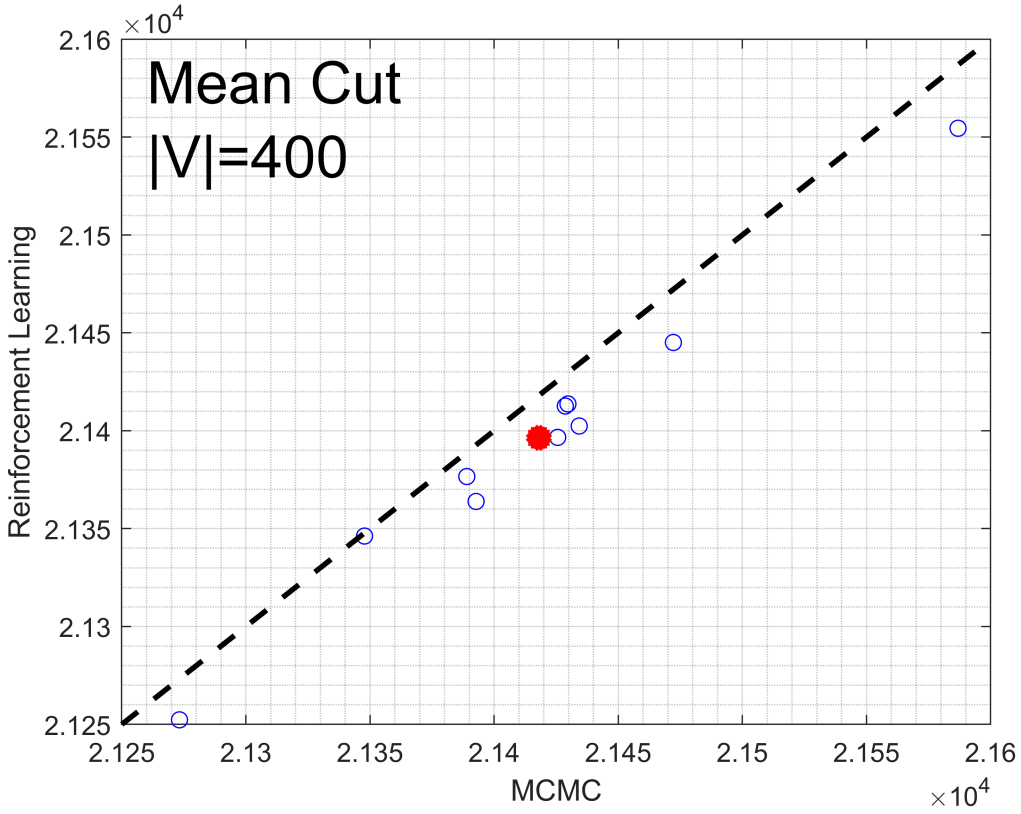


400 node plots (10 graphs)

```
clearvars
load("sfm_10graphs_400nodes_15runs_1e5prop.mat")
min_energies = min_energies * -1;
mean_vals_sfm = mean(min_energies, 2);
plus_std_sfm = mean_vals_sfm + std(min_energies,0,2);
minus_std_sfm = mean_vals_sfm - std(min_energies,0,2);
min_vals_sfm = min(min_energies, [], 2);

load("rl_10graphs_400nodes_15runs.mat")
mean_vals_rl = mean(min_energies, 2);
plus_std_rl = mean_vals_rl + std(min_energies,0,2);
minus_std_rl = mean_vals_rl - std(min_energies,0,2);
min_vals_rl = min(min_energies, [], 2);
```

```
figure
grid on
grid minor
hold on
box on
scatter(mean_vals_sfm, mean_vals_rl,'b')
s = 21250;
f = 21600;
plot([s:1:f],[s:1:f], 'k--', 'linewidth', 2)
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Mean Cut','|V|=400'};
text(21260, 21560, str, 'FontSize', 22);
x = mean(mean_vals_sfm);
y = mean(mean_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)
hold off
```




```
figure
grid on
grid minor
hold on
box on
scatter(min_vals_sfm, min_vals_rl,'b')
s = 21150;
f = 21550;
plot([s:1:f],[s:1:f], 'k--', 'linewidth', 2)
```

```
xlabel('MCMC')
ylabel('Reinforcement Learning')
str = {'Best cut','|V|=400'};
text(21160, 21500, str, 'FontSize', 22);
x = mean(min_vals_sfm);
y = mean(min_vals_rl);
scatter(x, y, 'r*', 'linewidth',8)

hold off
```