```
Python 3.6.4 |Anaconda custom (64-bit)| (default, Jan 16 2018, 10:22:32) [MSC v.1900 64 bit (AMD64)]
Type "copyright", "credits" or "license" for more information.

IPython 6.2.1 -- An enhanced Interactive Python.

Restarting kernel...
```
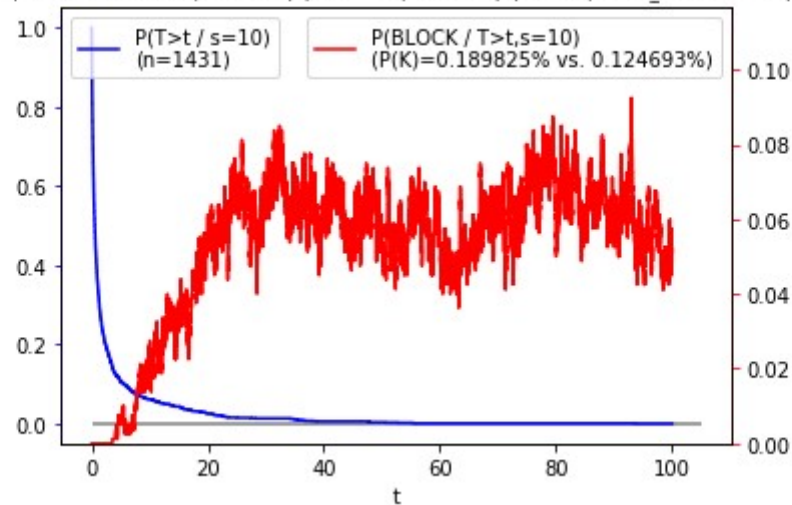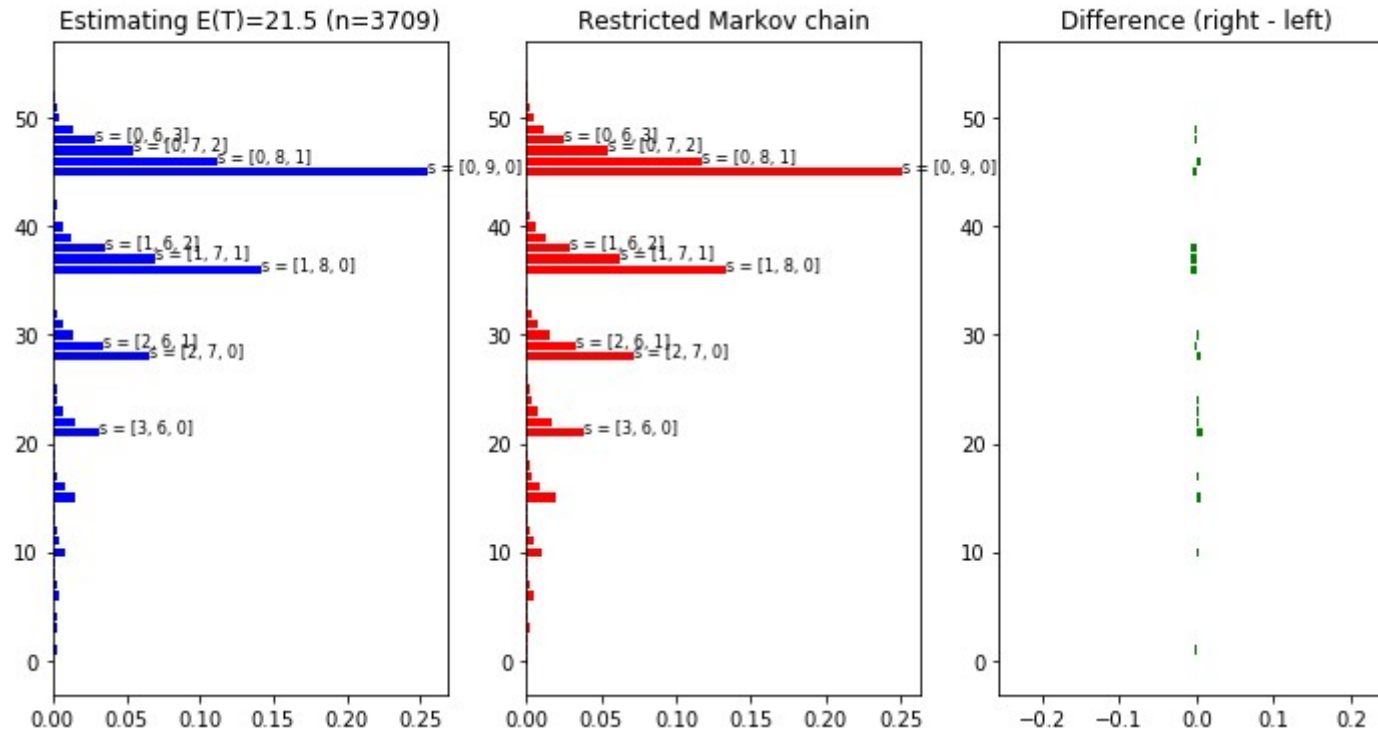

```
In [1]: runfile('E:/Daniel/Projects/PhD-RL-Toulouse/projects/Python/test/test_QB.py', wdir='E:/Daniel/Projects/PhD-RL-Toulouse/projects/Python/test')
Directory:
E:\Daniel\Projects\PhD-RL-Toulouse\projects
has been prepended to the module search path.
Log file '../../RL-002-QueueBlocking/logs/test_fv_implementation_20210505_200139.log' has been open for output.
Started at: 2021-05-05 20:01:39
C:\ProgramData\Anaconda\Anaconda3\lib\site-packages\matplotlib\pyplot.py:528: RuntimeWarning: More than 20 figures have been opened. Figures created through
the pyplot interface (`matplotlib.pyplot.figure`) are retained until explicitly closed and may consume too much memory. (To control this warning, see the
rcParam `figure.max_open_warning`).
  max_open_warning, RuntimeWarning)
C:\ProgramData\Anaconda\Anaconda3\lib\site-packages\pandas\core\groupby.py:4291: FutureWarning: using a dict with renaming is deprecated and will be removed in
a future version
  return super(DataFrameGroupBy, self).aggregate(arg, *args, **kwargs)
Ended at: 2021-05-06 01:47:24
Execution time: 345.8 min, 5.8 hours
```
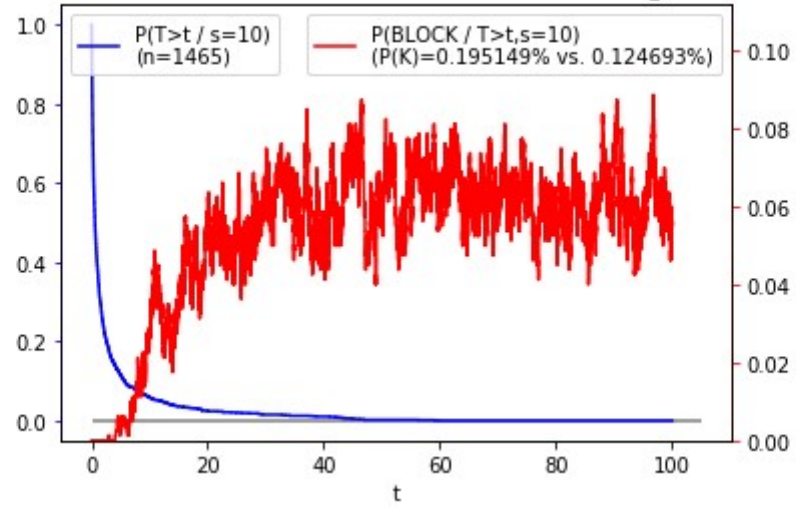

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=21.5(n=3709), finalize=ABS, seed=1718
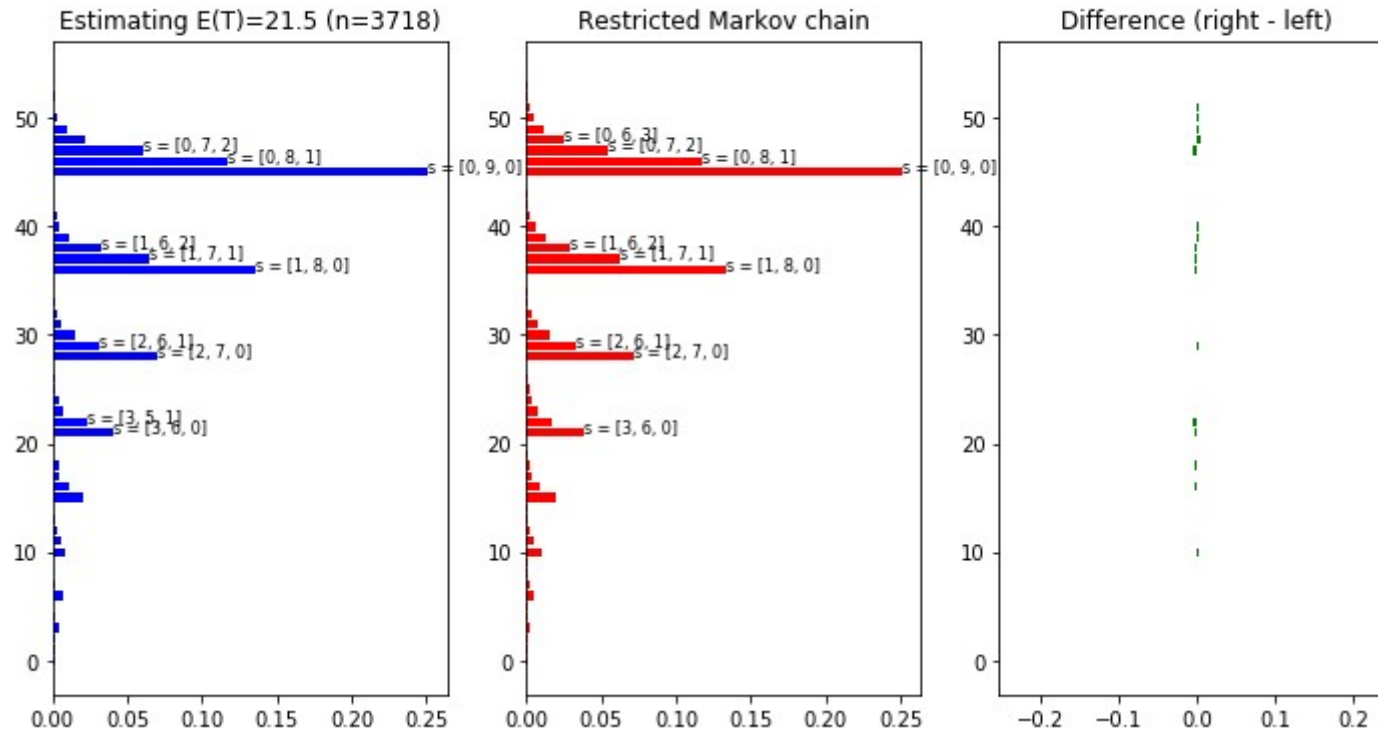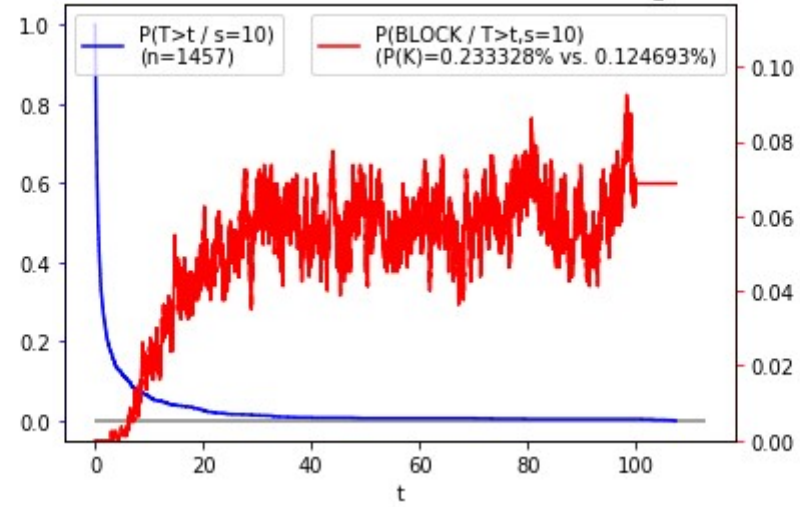
Distribution of absorption states

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=21.5(n=3718), finalize=ABS, seed=1719
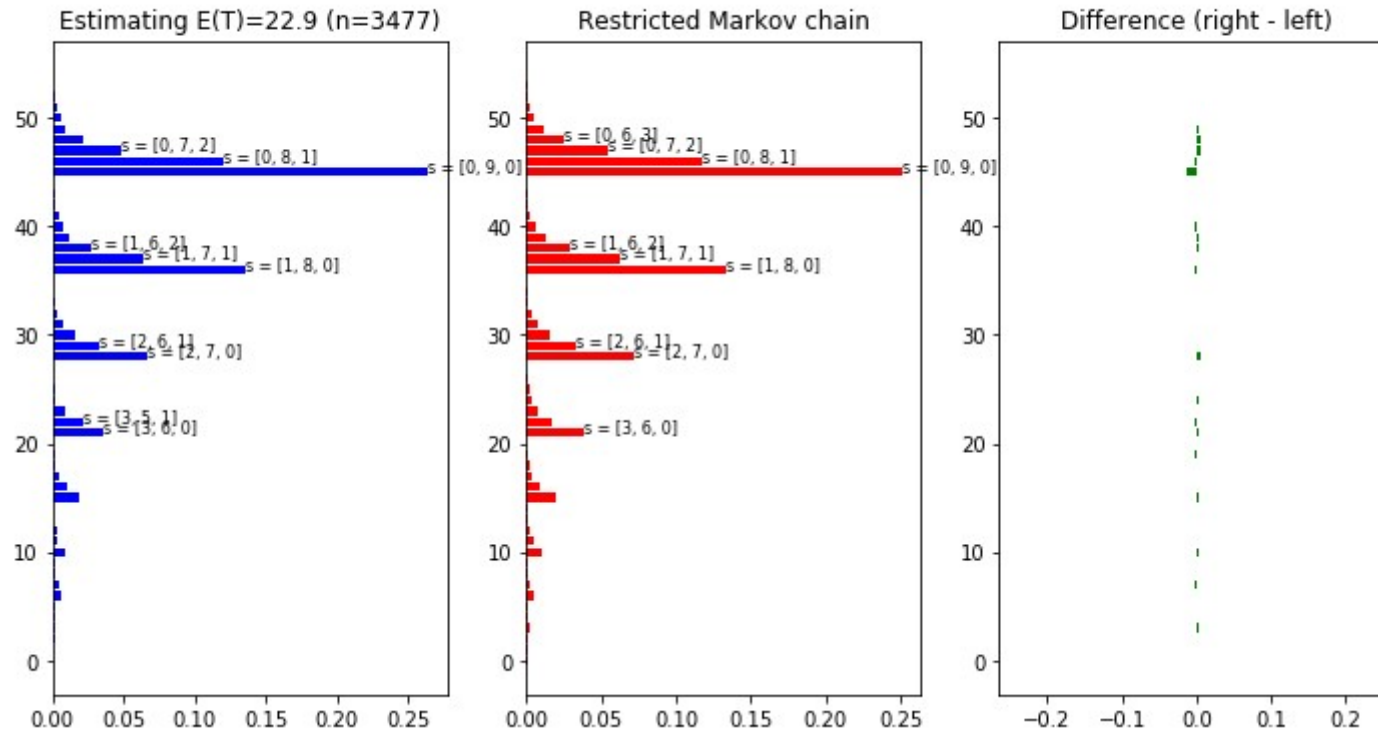
Distribution of absorption states

Estimating E(T)=21.5 (n=3718)

s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
s = [2, 7, 0]
s = [3, 5, 1]
s = [3, 6, 0]

Restricted Markov chain

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
s = [2, 7, 0]
s = [3, 6, 0]

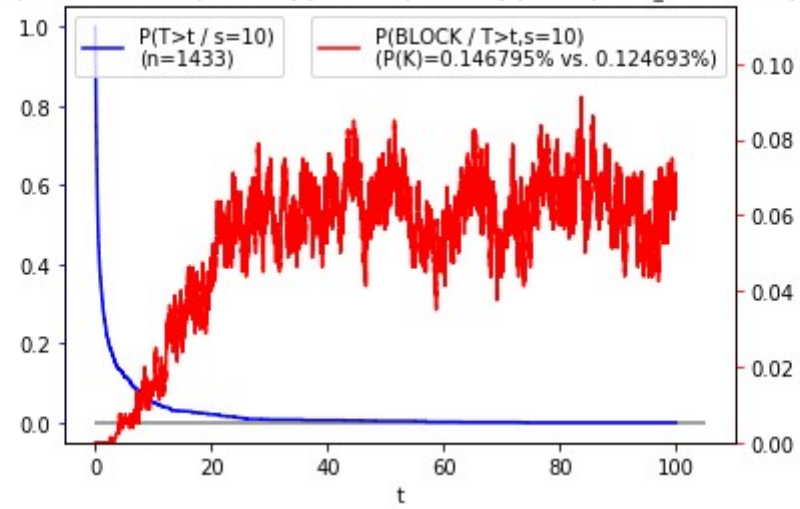**Difference (right - left)**

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=22.9(n=3477), finalize=ABS, seed=1720

Distribution of absorption states

Estimating E(T)=22.9 (n=3477)

Restricted Markov chain

Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=21.9(n=3640), finalize=ABS, seed=1721
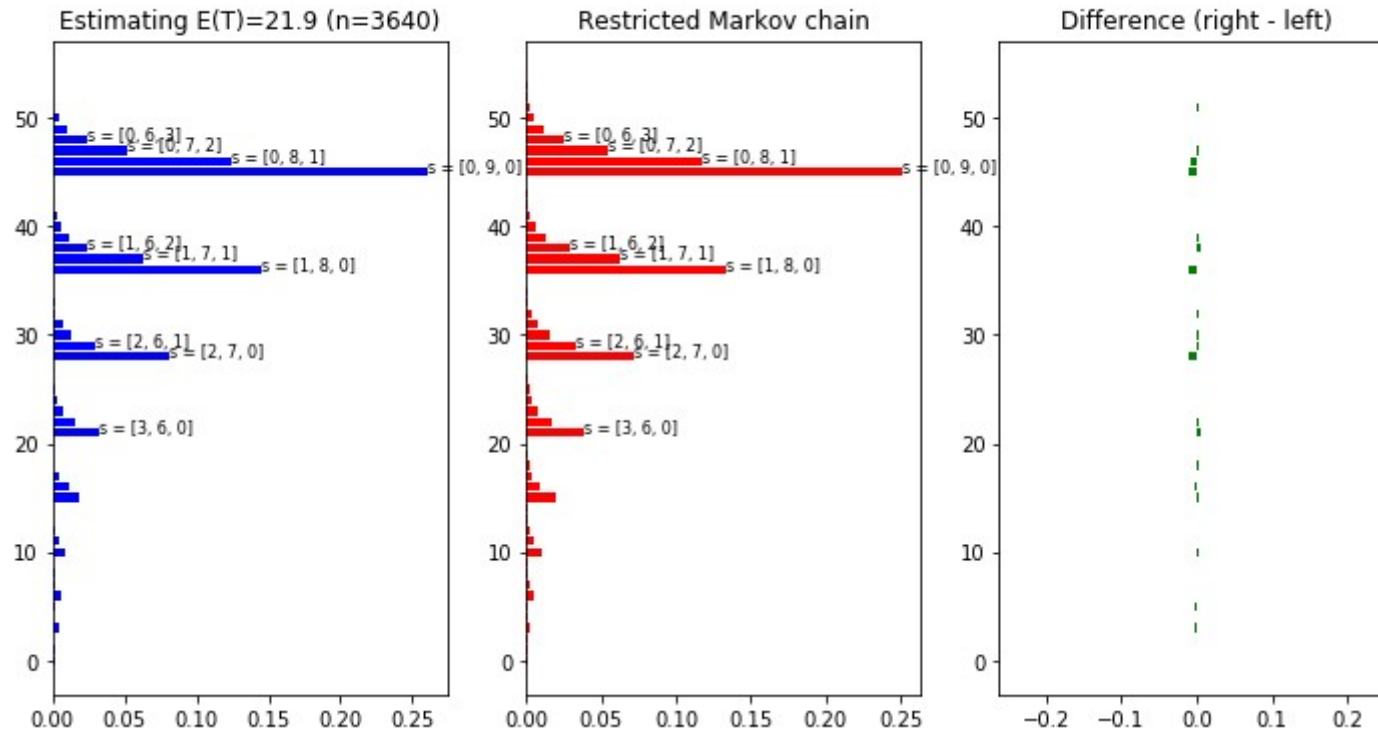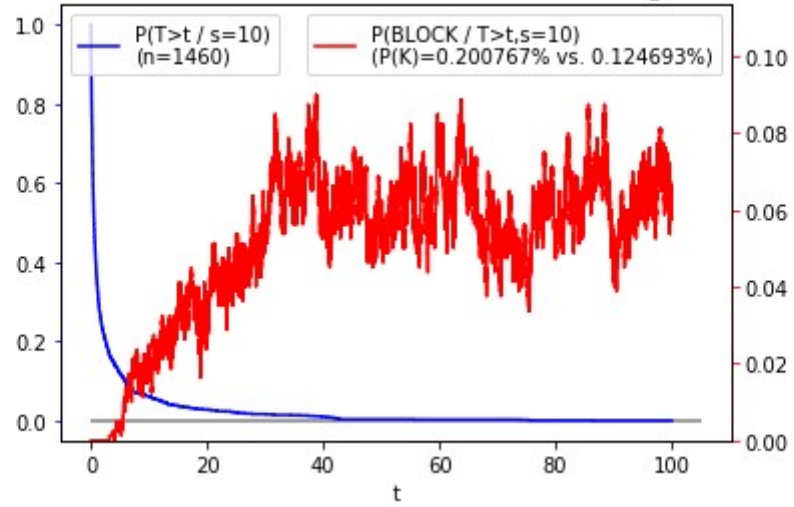
Distribution of absorption states

Estimating E(T)=21.9 (n=3640) — Restricted Markov chain — Difference (right - left)

Left panel (blue):
- s = [0, 6, 3]
- s = [0, 7, 2]
- s = [0, 8, 1]
- s = [0, 9, 0]
- s = [1, 6, 2]
- s = [1, 7, 1]
- s = [1, 8, 0]
- s = [2, 6, 1]
- s = [2, 7, 0]
- s = [3, 6, 0]

Middle panel (red):
- s = [0, 6, 3]
- s = [0, 7, 2]
- s = [0, 8, 1]
- s = [0, 9, 0]
- s = [1, 6, 2]
- s = [1, 7, 1]
- s = [1, 8, 0]
- s = [2, 6, 1]
- s = [2, 7, 0]
- s = [3, 6, 0]

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=21.4(n=3722), finalize=ABS, seed=1722
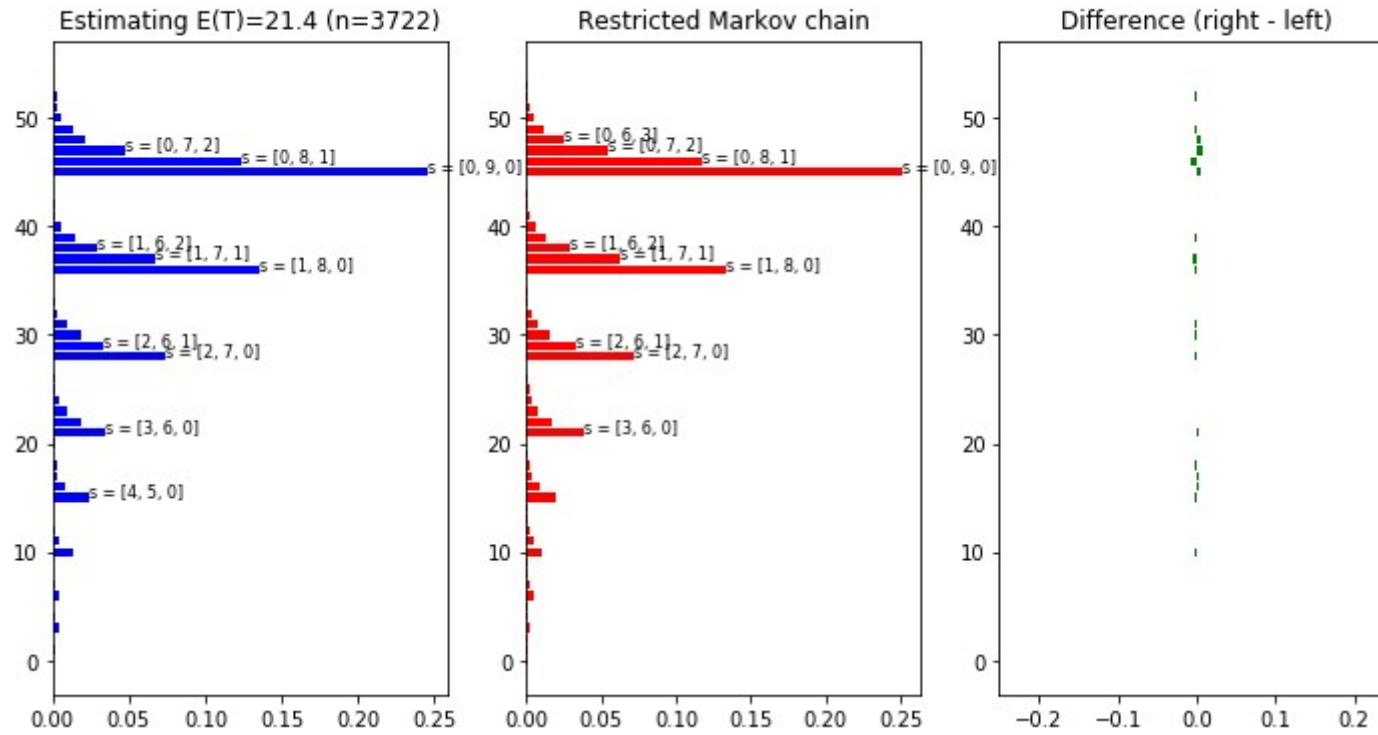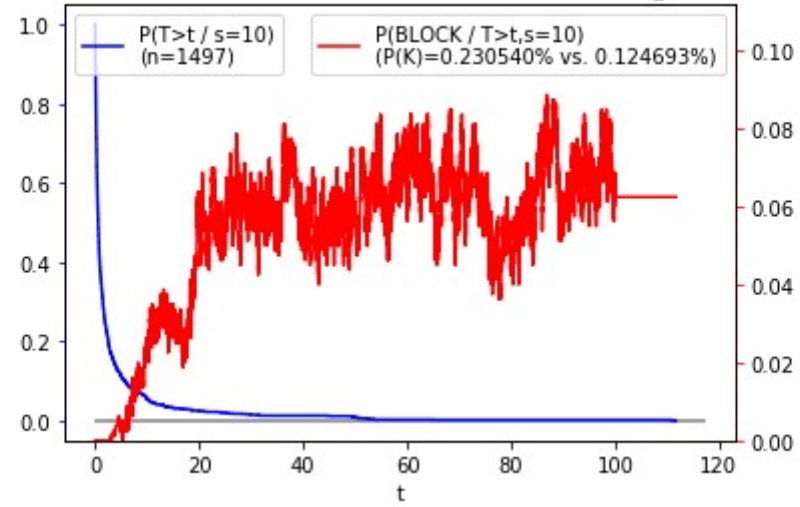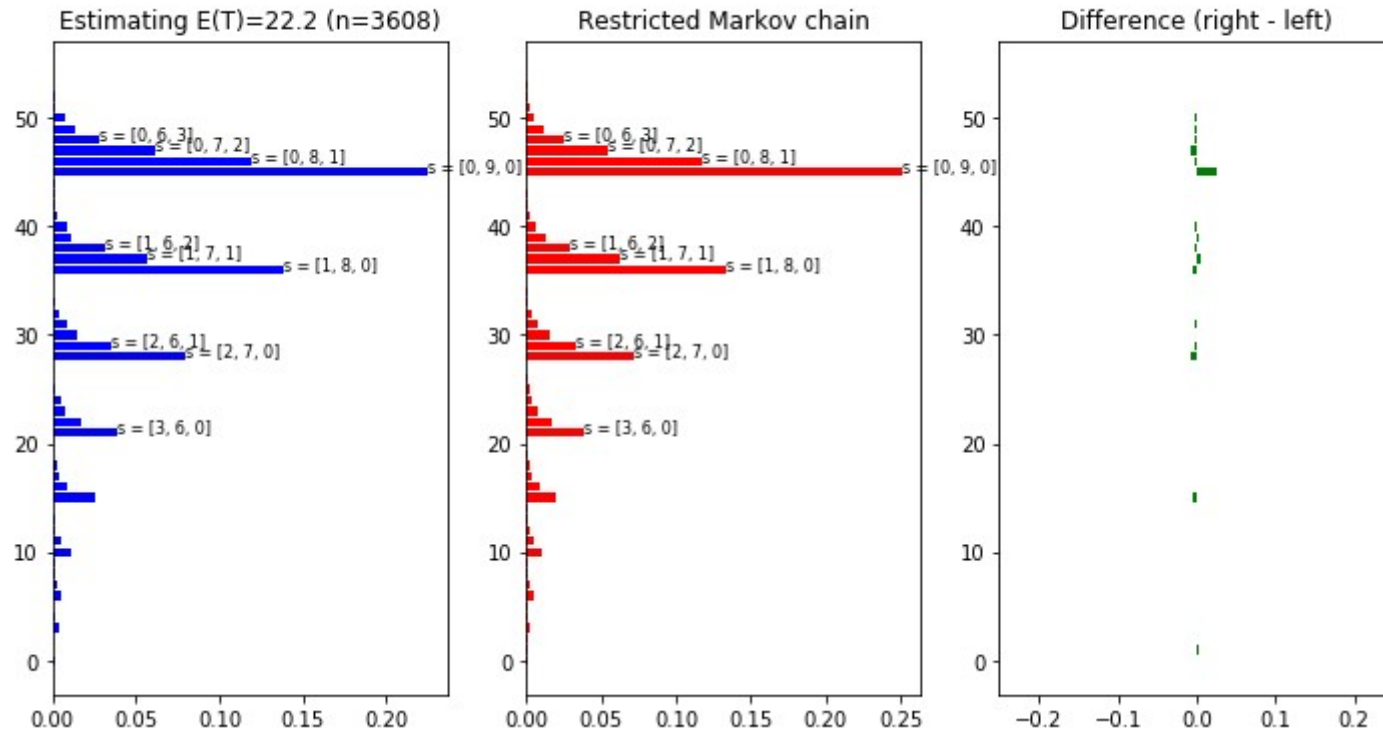
Distribution of absorption states

Estimating E(T)=21.4 (n=3722) | Restricted Markov chain | Difference (right - left)

Left panel (blue):
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
s = [2, 7, 0]
s = [3, 6, 0]
s = [4, 5, 0]

Middle panel (red):
s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
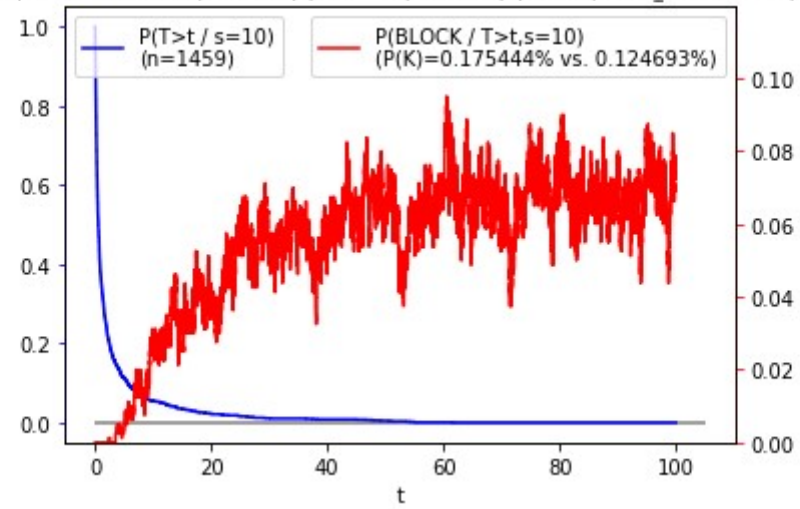s = [2, 7, 0]
s = [3, 6, 0]

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=22.2(n=3608), finalize=ABS, seed=1723
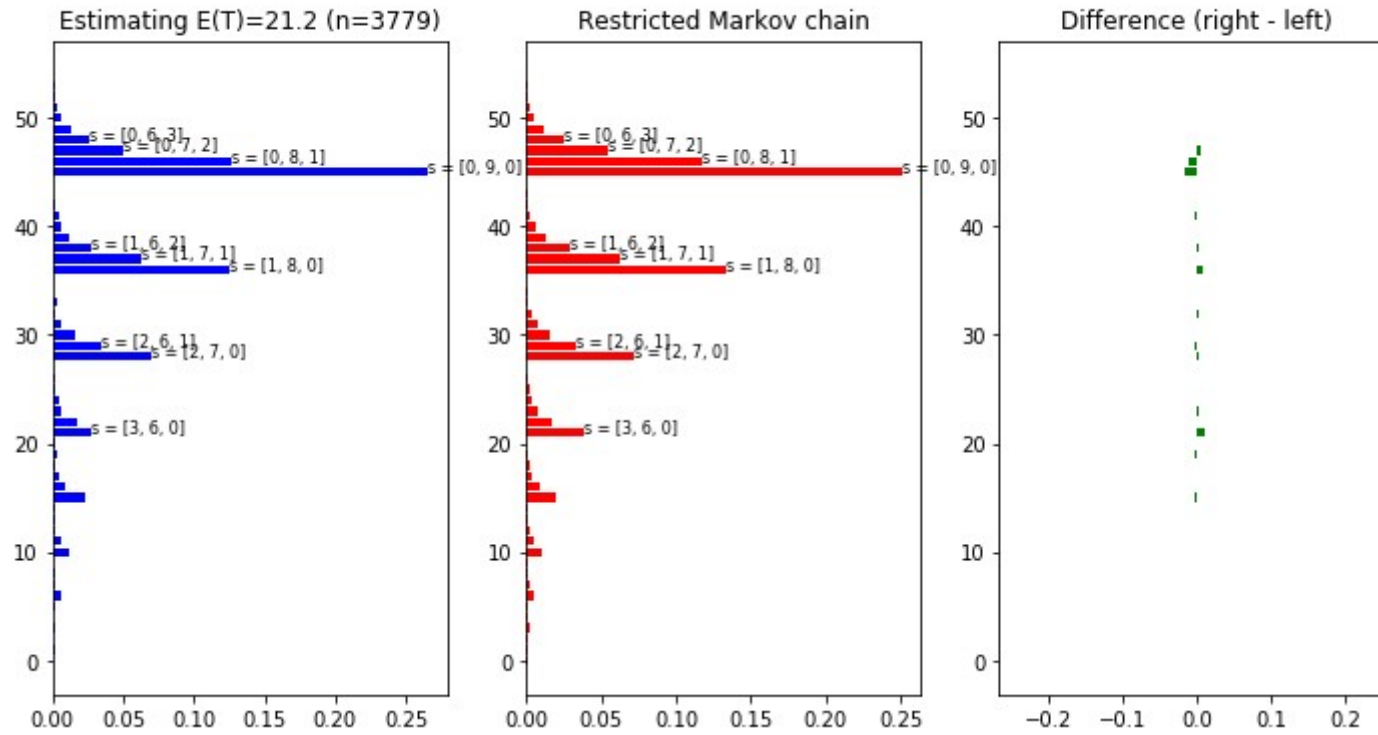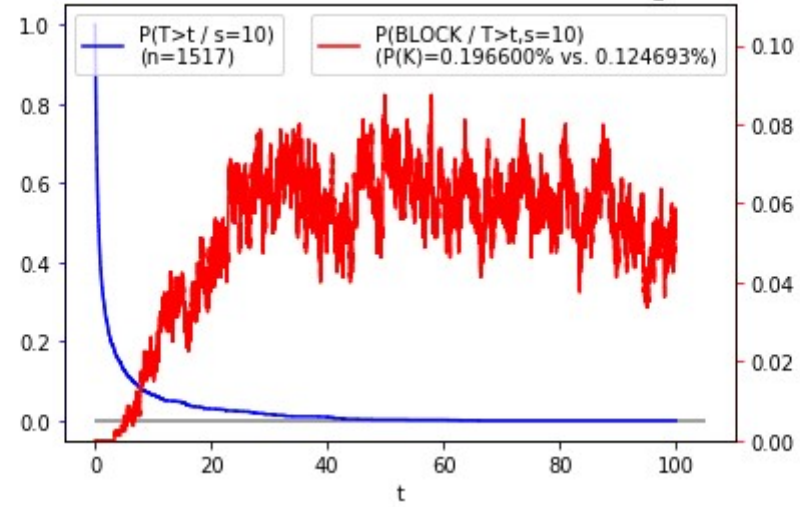
Distribution of absorption states

Estimating E(T)=22.2 (n=3608)   Restricted Markov chain   Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=21.2(n=3779), finalize=ABS, seed=1724
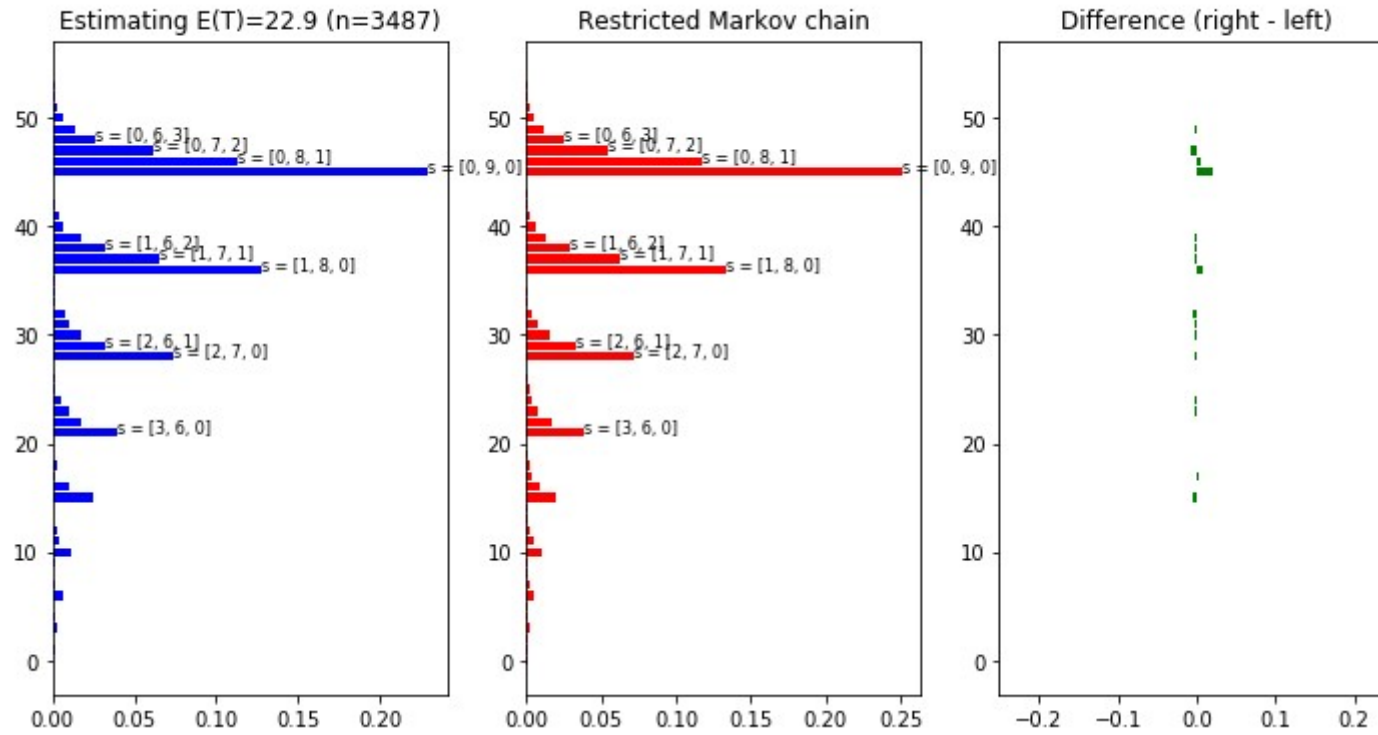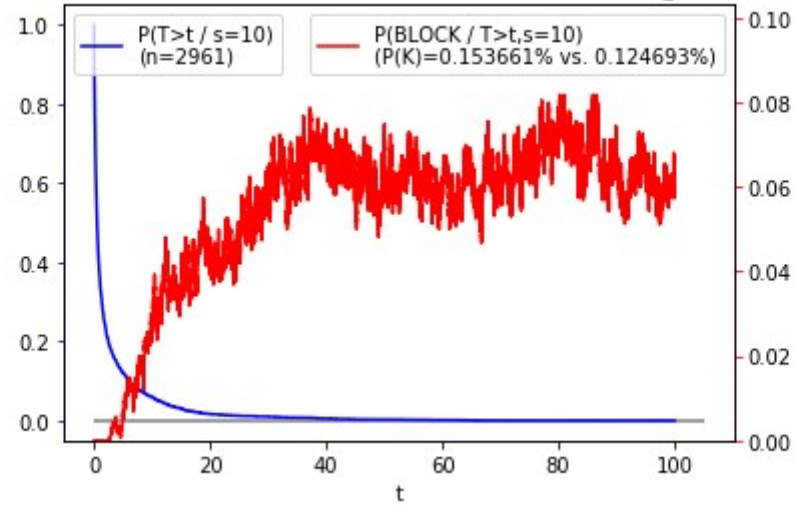

Legend:
- P(T>t / s=10) (n=1459)
- P(BLOCK / T>t,s=10) (P(K)=0.175444% vs. 0.124693%)

Distribution of absorption states

Estimating E(T)=21.2 (n=3779)

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]

s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]

s = [2, 6, 1]
s = [2, 7, 0]

s = [3, 6, 0]

Restricted Markov chain

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]

s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]

s = [2, 6, 1]
s = [2, 7, 0]

s = [3, 6, 0]

Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=800, activation size=10, maxtime(1)=80000.0, maxtime(N)=100.0, mean_lifetime=22.9(n=3487), finalize=ABS, seed=1725
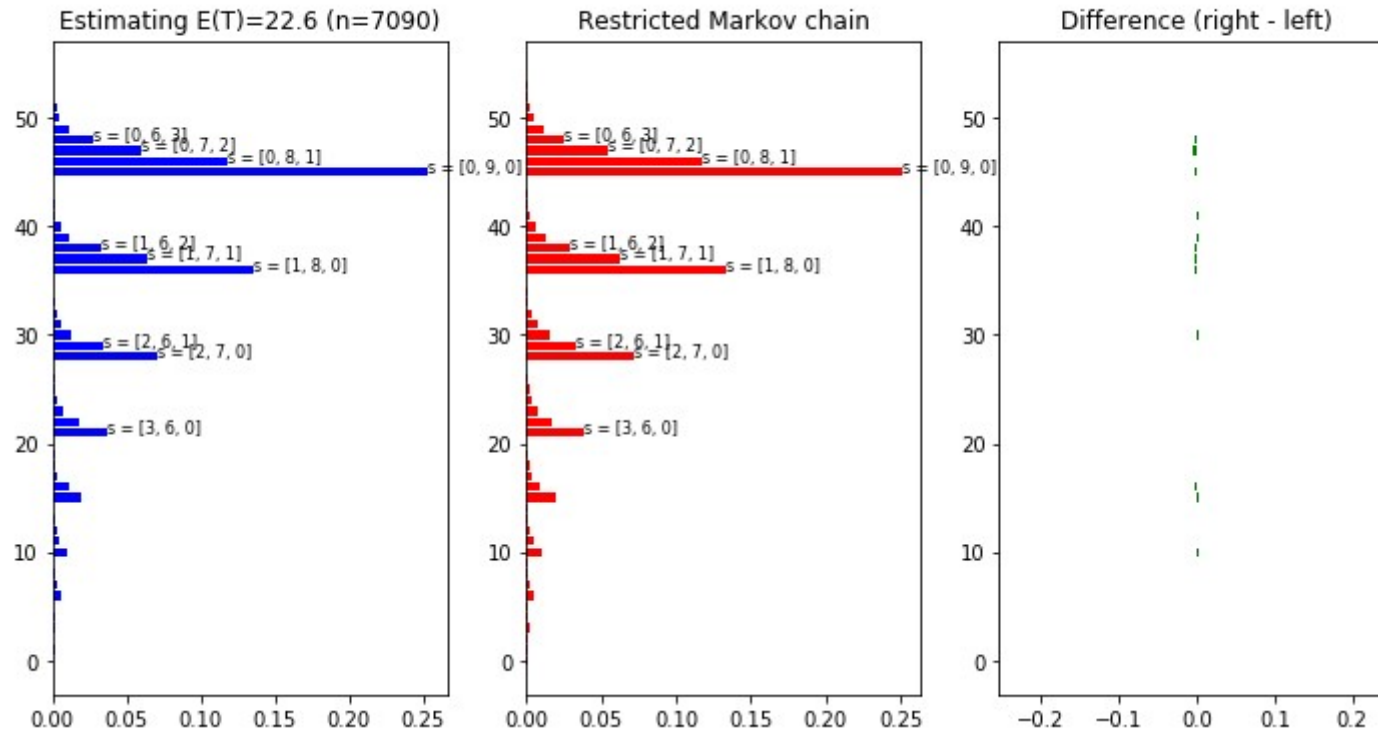
Distribution of absorption states

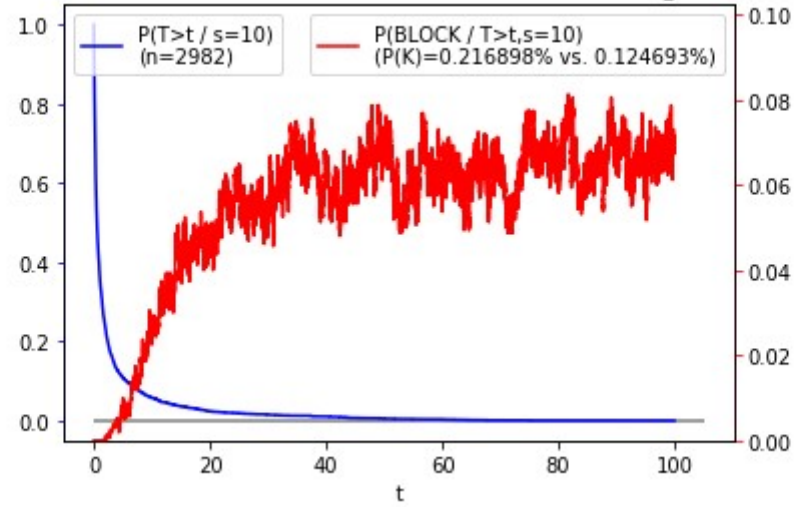| Estimating E(T)=22.9 (n=3487) | Restricted Markov chain | Difference (right - left) |

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.6(n=7090), finalize=ABS, seed=1718
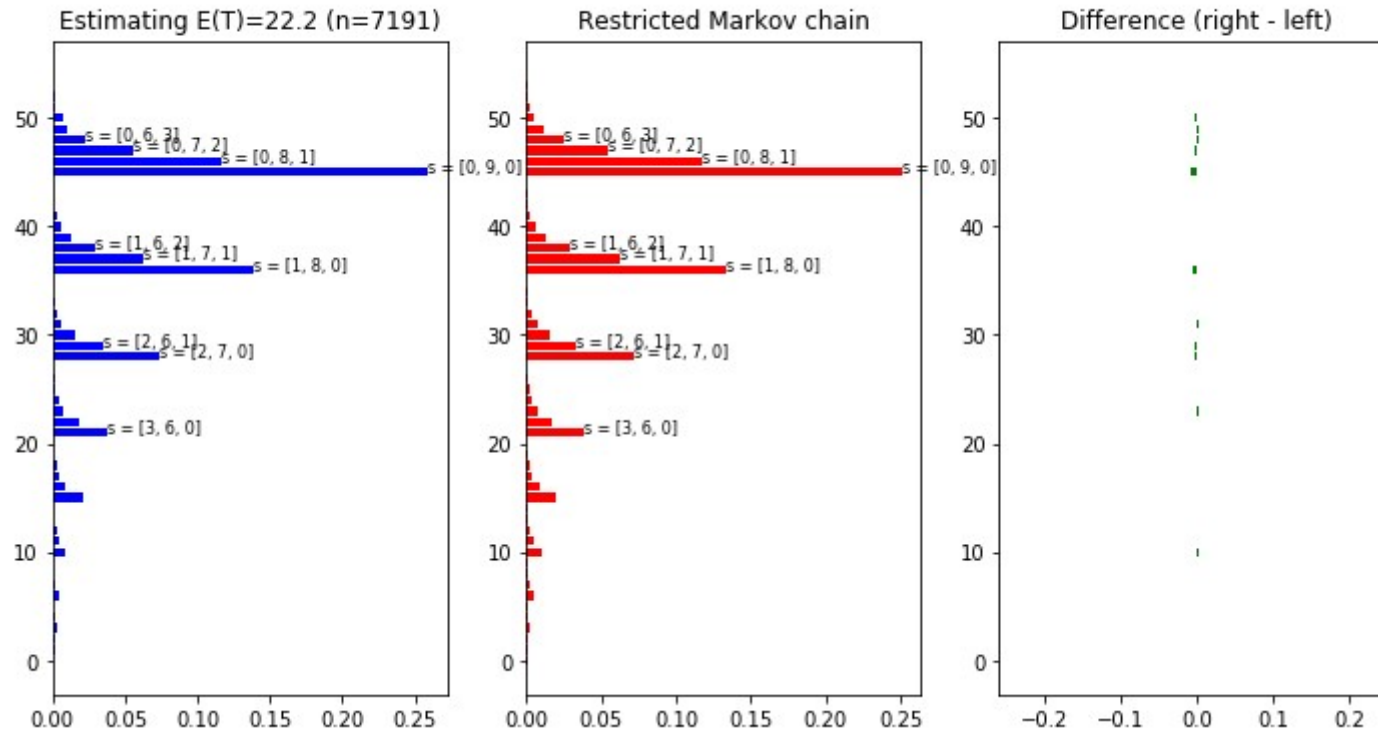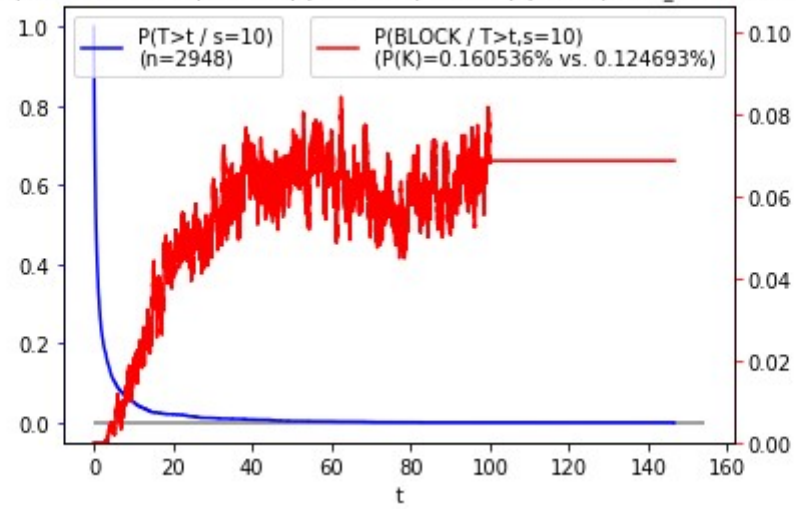
Distribution of absorption states

Estimating E(T)=22.6 (n=7090)   Restricted Markov chain   Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.2(n=7191), finalize=ABS, seed=1719
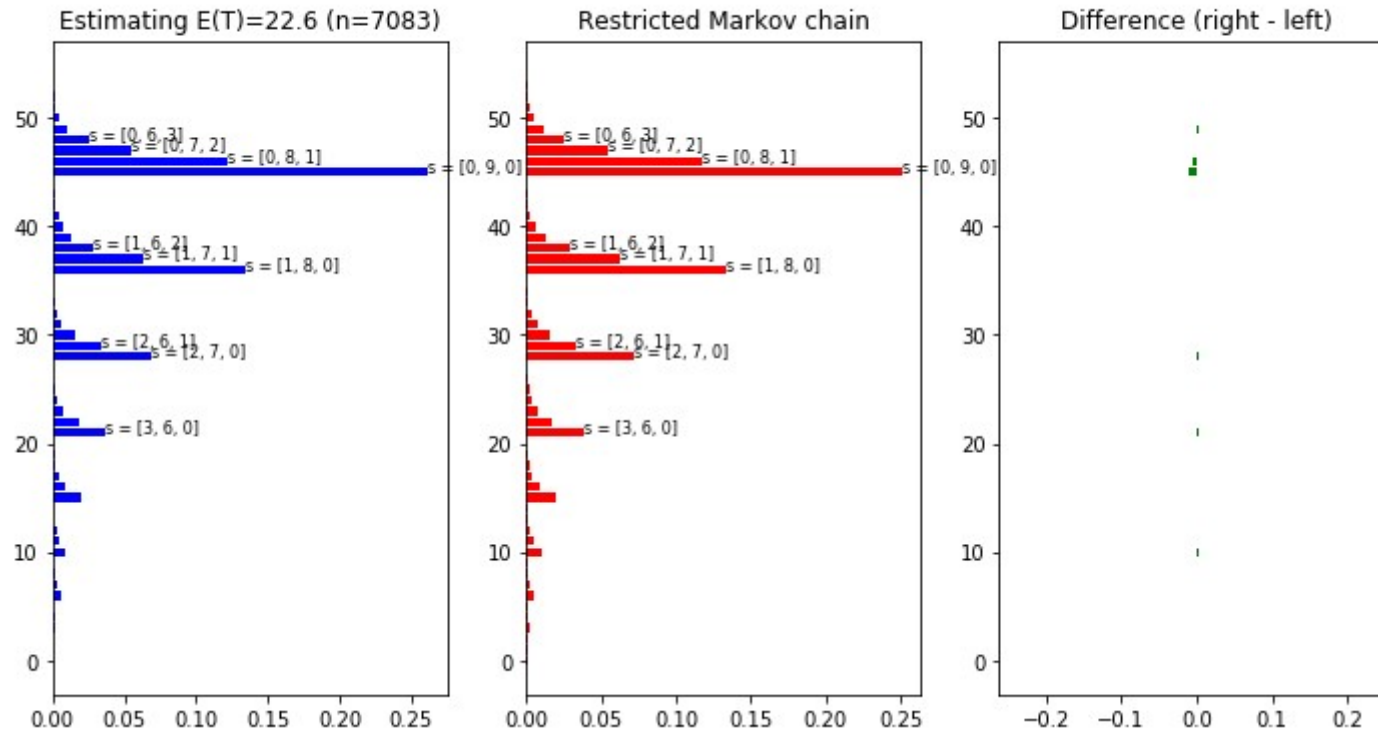
Distribution of absorption states

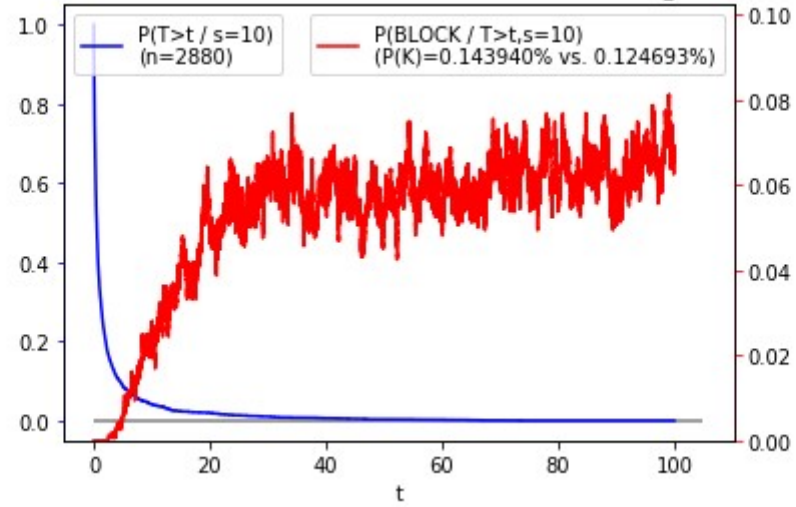| Estimating E(T)=22.2 (n=7191) | Restricted Markov chain | Difference (right - left) |

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.6(n=7083), finalize=ABS, seed=1720

Distribution of absorption states

Estimating E(T)=22.6 (n=7083)   Restricted Markov chain   Difference (right - left)

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
s = [2, 7, 0]
s = [3, 6, 0]

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.1(n=7236), finalize=ABS, seed=1721
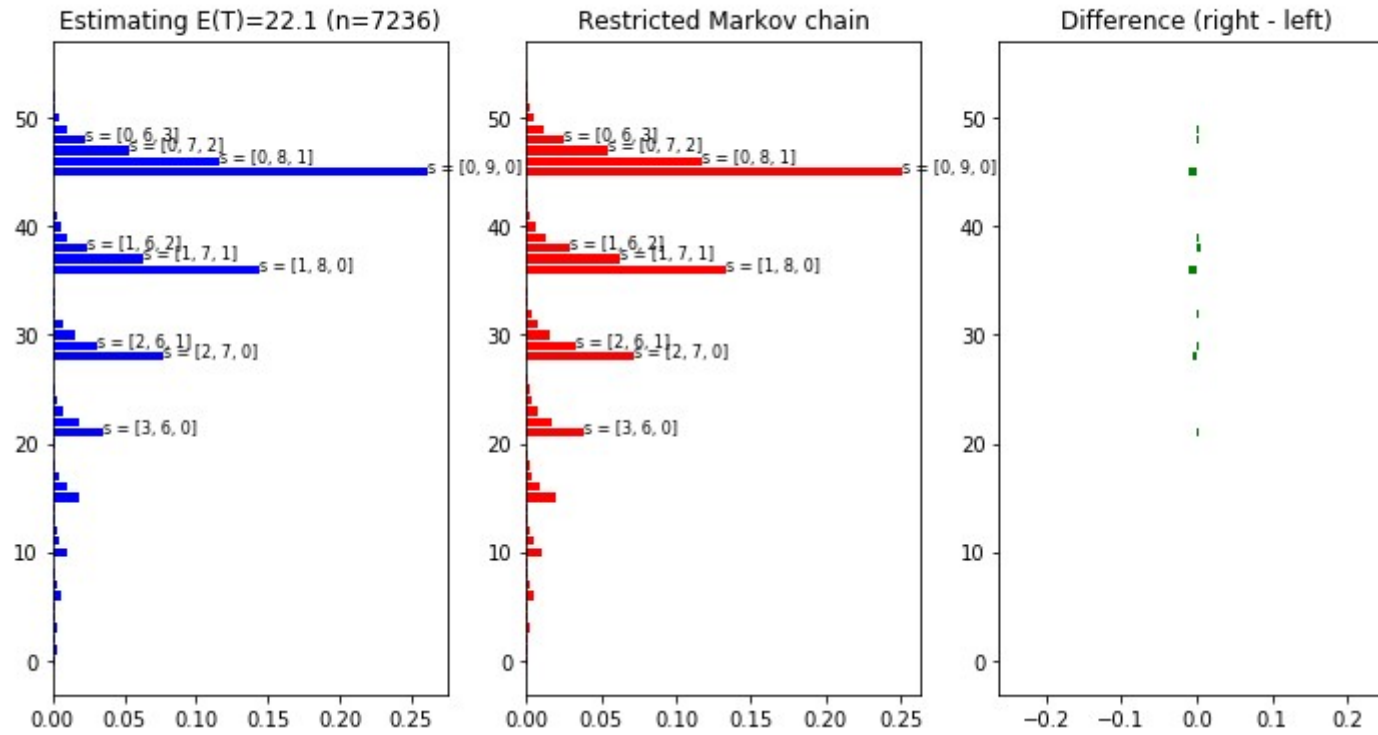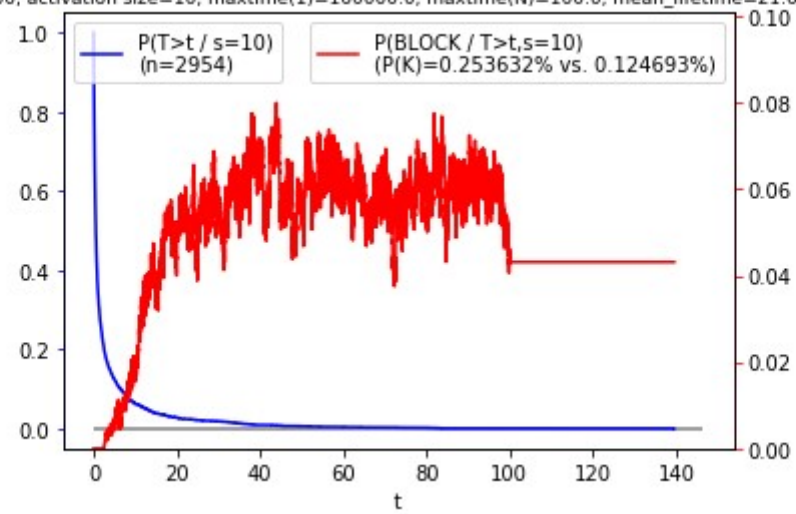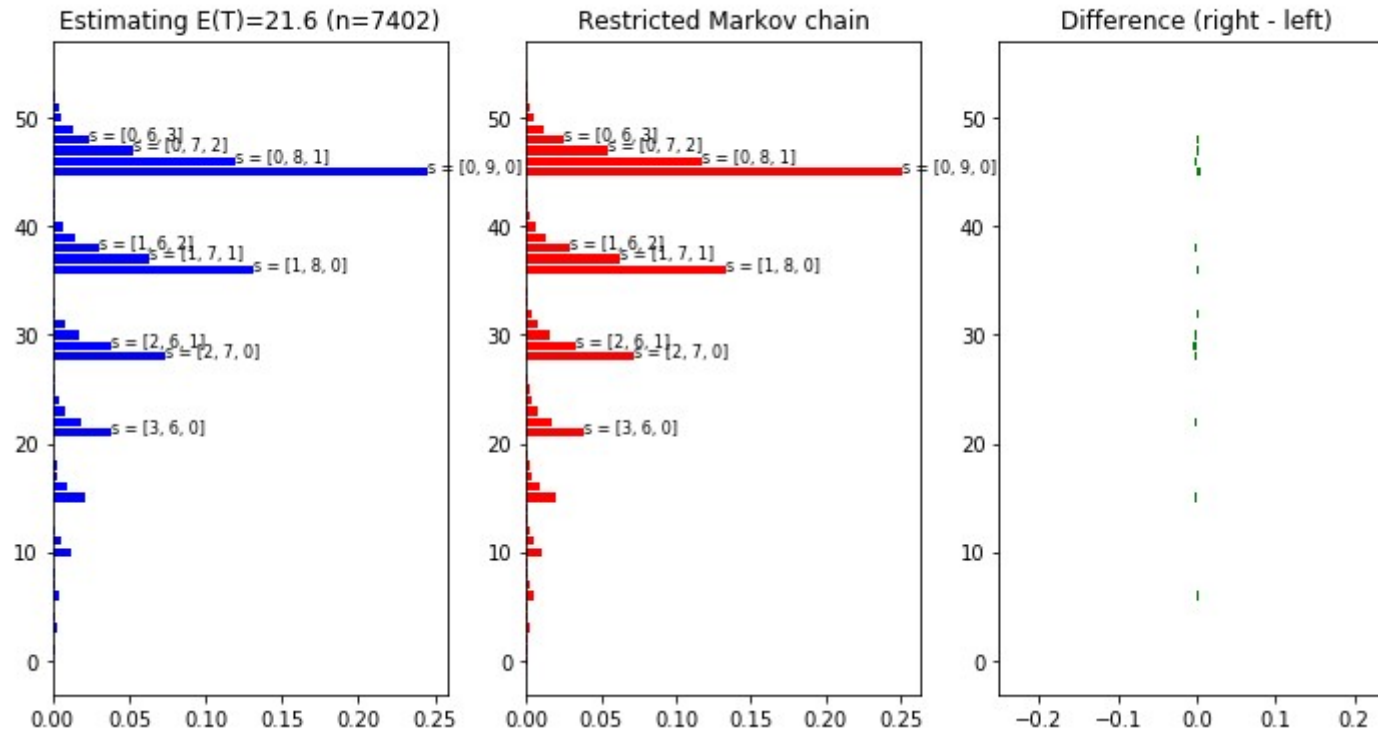
Distribution of absorption states

Estimating E(T)=22.1 (n=7236)   Restricted Markov chain   Difference (right - left)

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]

s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]

s = [2, 6, 1]
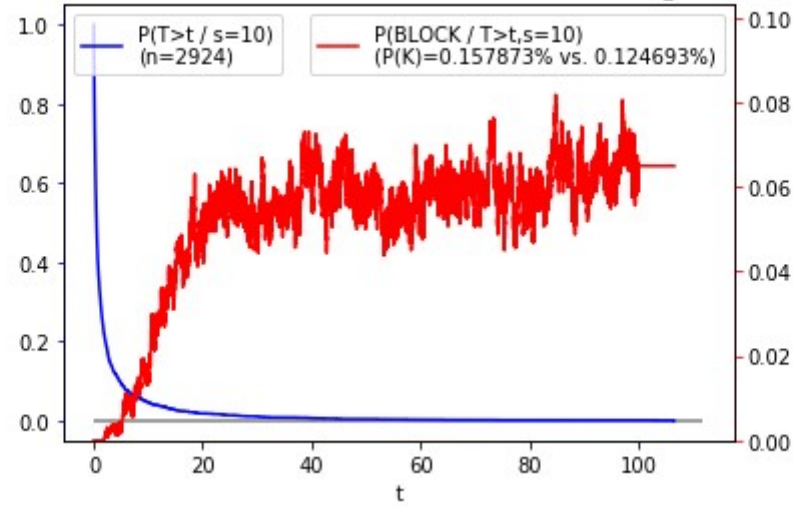s = [2, 7, 0]

s = [3, 6, 0]

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K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=21.6(n=7402), finalize=ABS, seed=1722
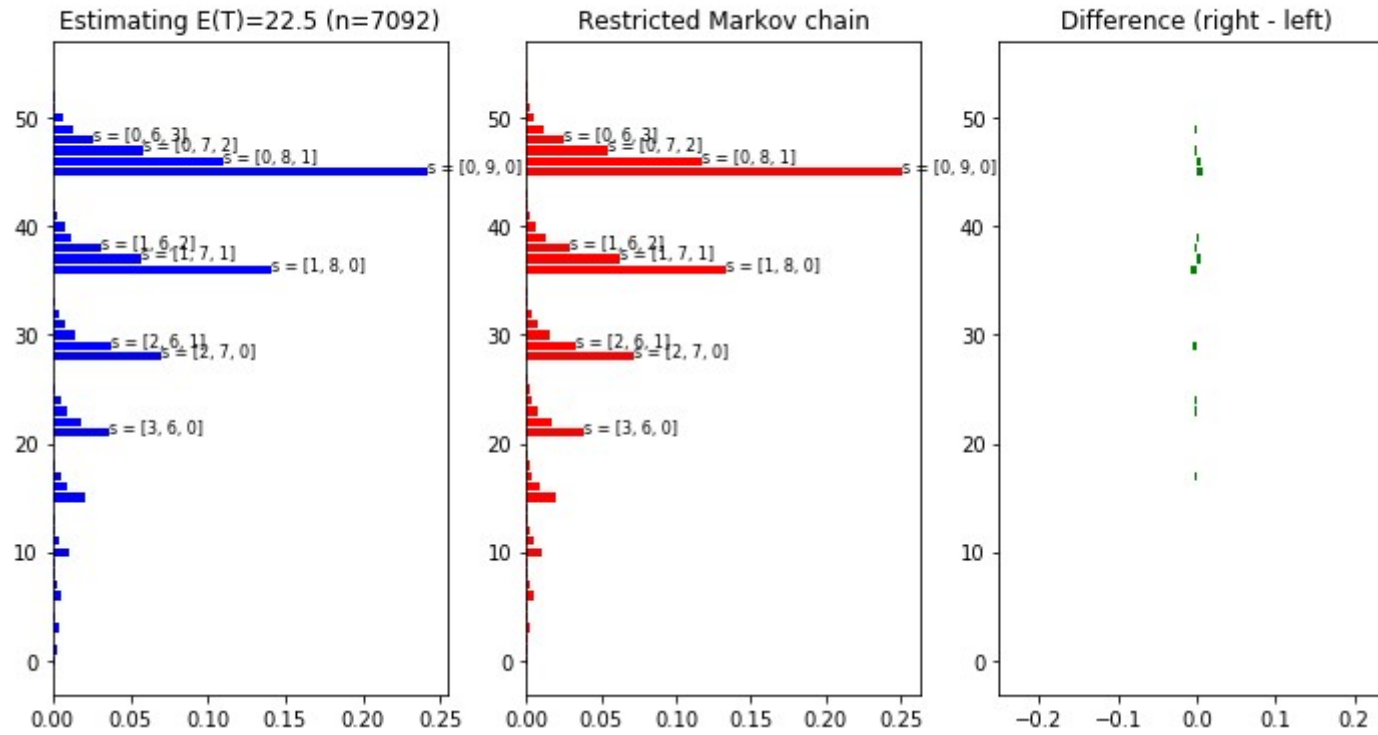
Distribution of absorption states

Estimating E(T)=21.6 (n=7402)   Restricted Markov chain   Difference (right - left)

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]
s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]
s = [2, 6, 1]
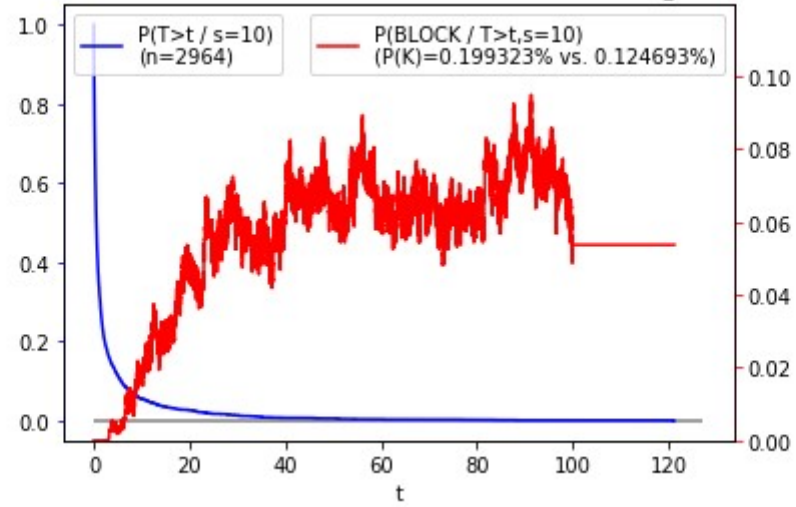s = [2, 7, 0]
s = [3, 6, 0]

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.5(n=7092), finalize=ABS, seed=1723
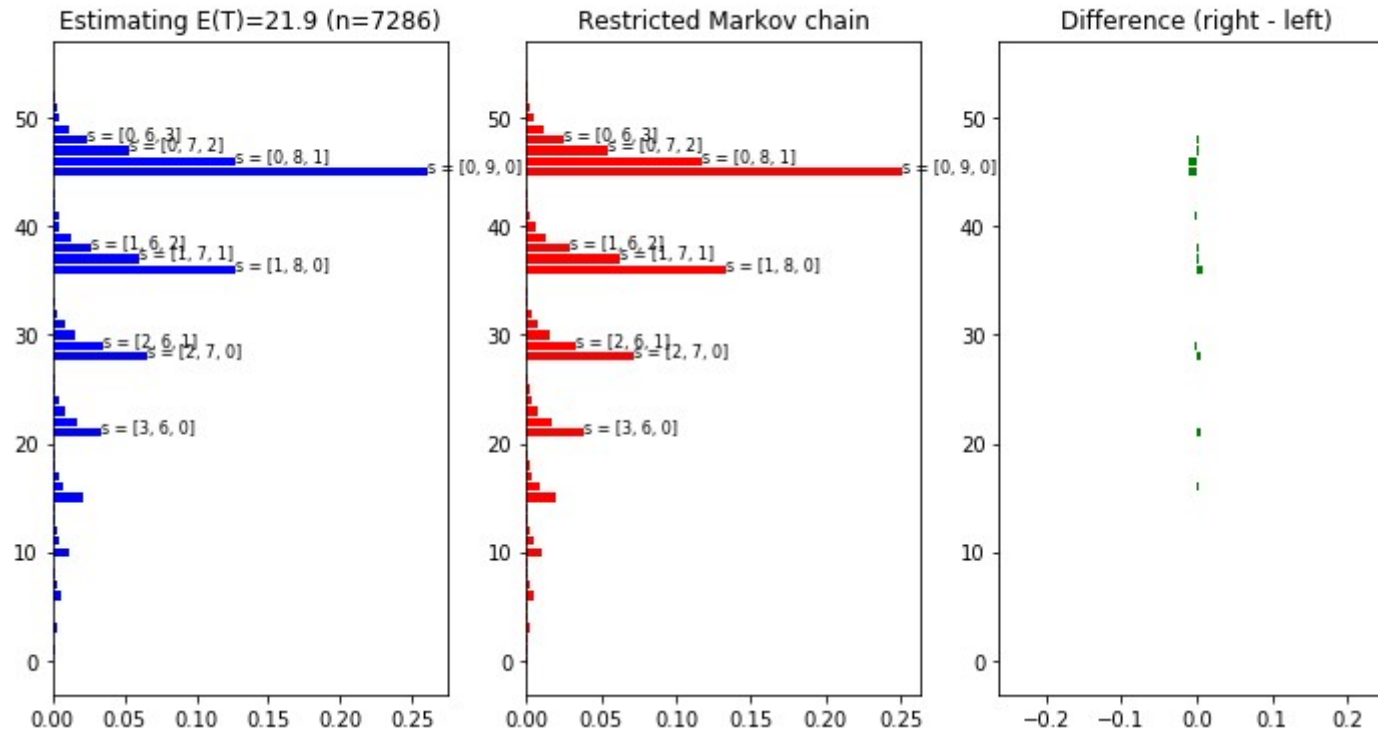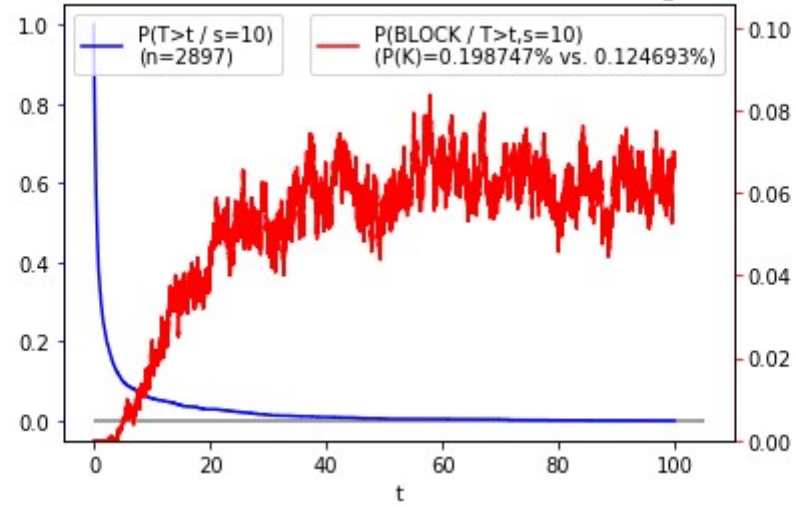
Distribution of absorption states

Estimating E(T)=22.5 (n=7092)

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]

s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]

s = [2, 6, 1]
s = [2, 7, 0]

s = [3, 6, 0]

Restricted Markov chain

s = [0, 6, 3]
s = [0, 7, 2]
s = [0, 8, 1]
s = [0, 9, 0]

s = [1, 6, 2]
s = [1, 7, 1]
s = [1, 8, 0]

s = [2, 6, 1]
s = [2, 7, 0]

s = [3, 6, 0]

Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=21.9(n=7286), finalize=ABS, seed=1724
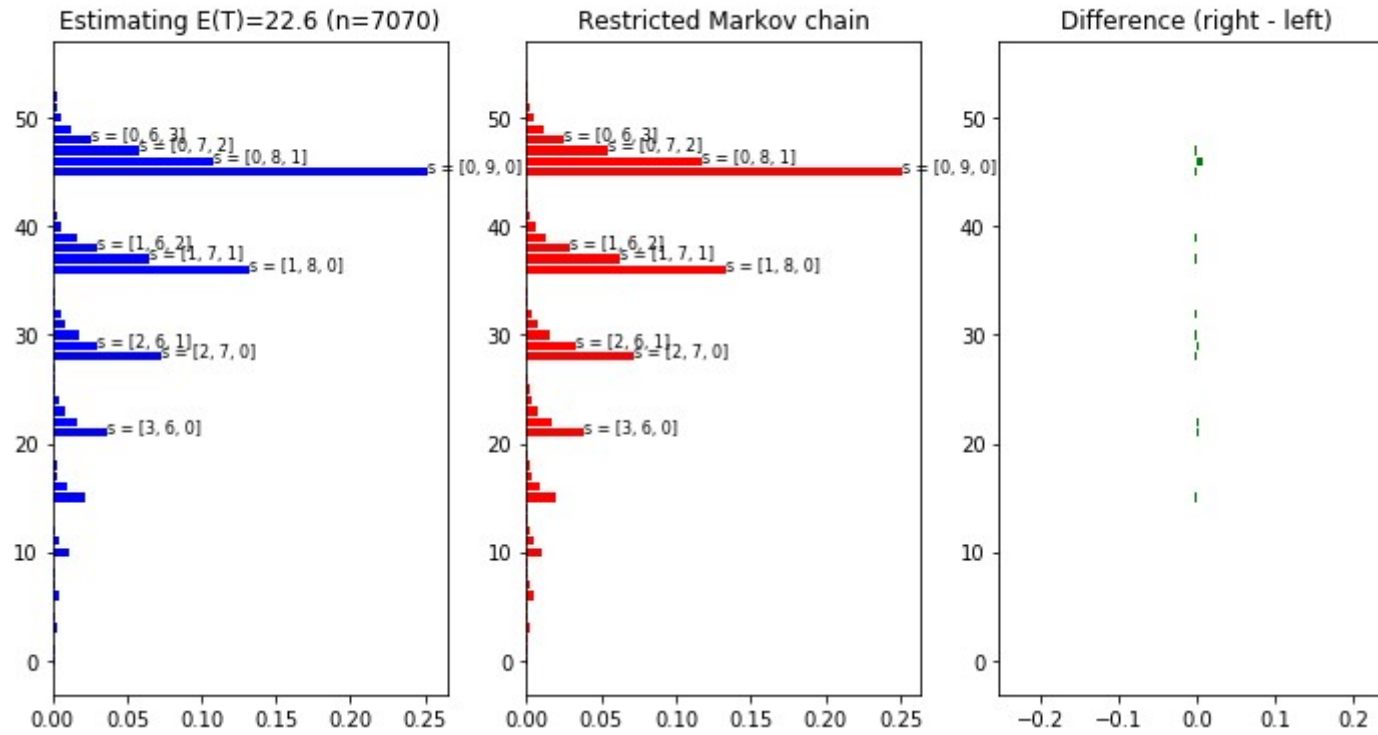
Distribution of absorption states

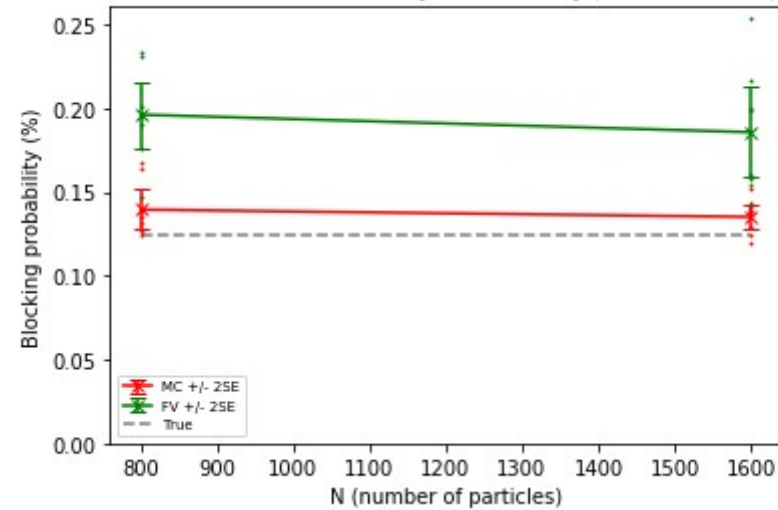| Estimating E(T)=21.9 (n=7286)	Restricted Markov chain	Difference (right - left)

K=20, rhos=[0.4, 0.75, 0.35], N=1600, activation size=10, maxtime(1)=160000.0, maxtime(N)=100.0, mean_lifetime=22.6(n=7070), finalize=ABS, seed=1725
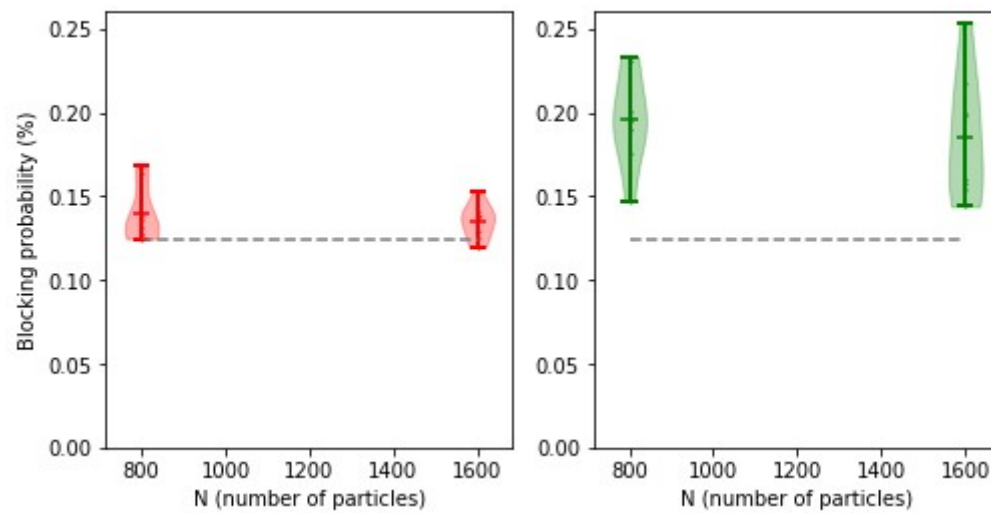
Distribution of absorption states

Simulation results for #servers=3, K=20, rhos=[0.4, 0.75, 0.35], (800<=N<=1600), T<=100, Rep=8

Simulation results for #servers=3, K=20, rhos=[0.4, 0.75, 0.35], (800<=N<=1600), T<=100, Rep=8

In [2]: