library("ggplot2")

setwd("C:/Users/uct1/Dropbox/My PC (LT-1C2002-001)/Documents/R/R-4.0.0/Workspace")

 myData4<-read.csv("results4.txt")  
 myData6<-read.csv("results6.txt")  
 myData8<-read.csv("results8.txt")

ggplot(data=myData4, aes(x=factor(States), y=Number\_of\_Inputs, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Inputs")+ theme(legend.position="top")

ggsave("inputs4.pdf", width=15)

ggplot(data=myData6, aes(x=factor(States), y=Number\_of\_Inputs, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Inputs")+ theme(legend.position="top")

ggsave("inputs6.pdf", width=15)

ggplot(data=myData8, aes(x=factor(States), y=Number\_of\_Inputs, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Inputs")+ theme(legend.position="top")

ggsave("inputs8.pdf", width=15)

ggplot(data=myData4, aes(x=factor(States), y=Number\_of\_Sequences, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Sequences")+ theme(legend.position="top")

ggsave("sequences4.pdf", width=15)

ggplot(data=myData6, aes(x=factor(States), y=Number\_of\_Sequences, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Sequences")+ theme(legend.position="top")

ggsave("sequences6.pdf", width=15)

ggplot(data=myData8, aes(x=factor(States), y=Number\_of\_Sequences, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Number of Sequences")+ theme(legend.position="top")

ggsave("sequences8.pdf", width=15)

ggplot(data=myData4, aes(x=factor(States), y=time, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Time (msecs.)")+ theme(legend.position="top")

ggsave("time4.pdf", width=15)

ggplot(data=myData6, aes(x=factor(States), y=time, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Time (msecs.)")+ theme(legend.position="top")

ggsave("time6.pdf", width=15)

ggplot(data=myData8, aes(x=factor(States), y=time, fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Time (msecs.)")+ theme(legend.position="top")

ggsave("time8.pdf", width=15)

ggplot(data=myData4, aes(x=factor(States), y=(PairINV+StatesINV\*States)\*100/(States\*(States-1)), fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Invertibility Ratio")+ theme(legend.position="top")

ggsave("Inv4.pdf", width=15)

ggplot(data=myData6, aes(x=factor(States), y=(PairINV+StatesINV\*States)\*100/(States\*(States-1)), fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Invertibility Ratio")+ theme(legend.position="top")

ggsave("Inv6.pdf", width=15)

ggplot(data=myData8, aes(x=factor(States), y=(PairINV+StatesINV\*States)\*100/(States\*(States-1)), fill=Algorithm))+ geom\_point(position=position\_jitterdodge(jitter.width=0.20),aes(color=Algorithm,shape=Algorithm),alpha=0.3,show.legend=FALSE) + geom\_boxplot(aes(fill=Algorithm),alpha=0.5)+ facet\_grid(. ~ factor(States),scales="free")+theme(strip.text.x=element\_text(size=22))+scale\_fill\_discrete(name = "Algorithm", labels = c("Petrenko", "THBE", "THBE-IS"))+ theme(legend.text=element\_text(size=22),legend.title=element\_text(size=22))+theme(axis.title.y = element\_text(size=22))+theme(axis.text.y = element\_text(size=22))+theme(axis.title.x=element\_blank(), axis.text.x=element\_blank())+ylab("Invertibility Ratio")+ theme(legend.position="top")

ggsave("Inv8.pdf", width=15)