

Imperial College  
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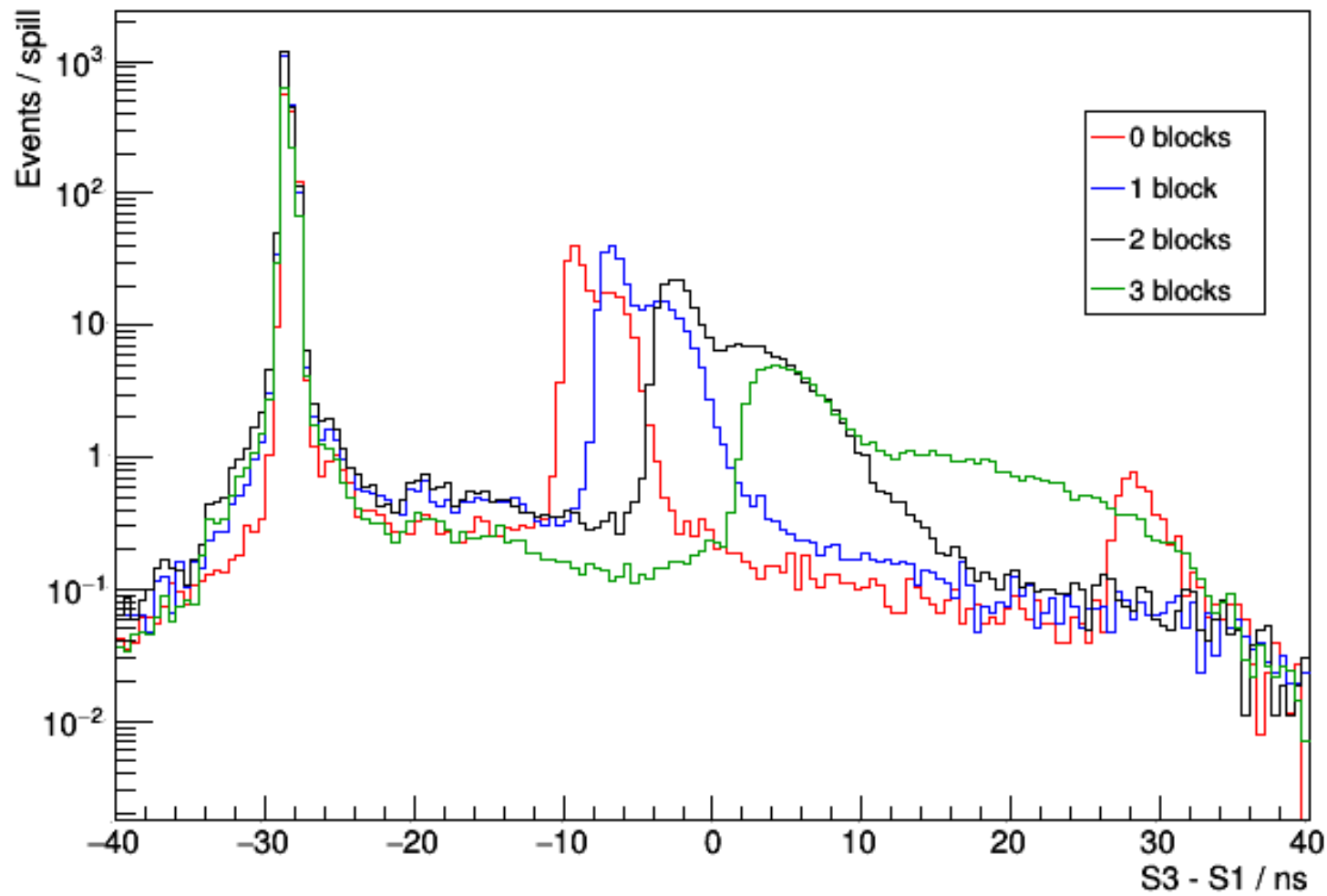
# Beam S4 Update

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HPTPC Analysis Meeting 01/02/19

# S3

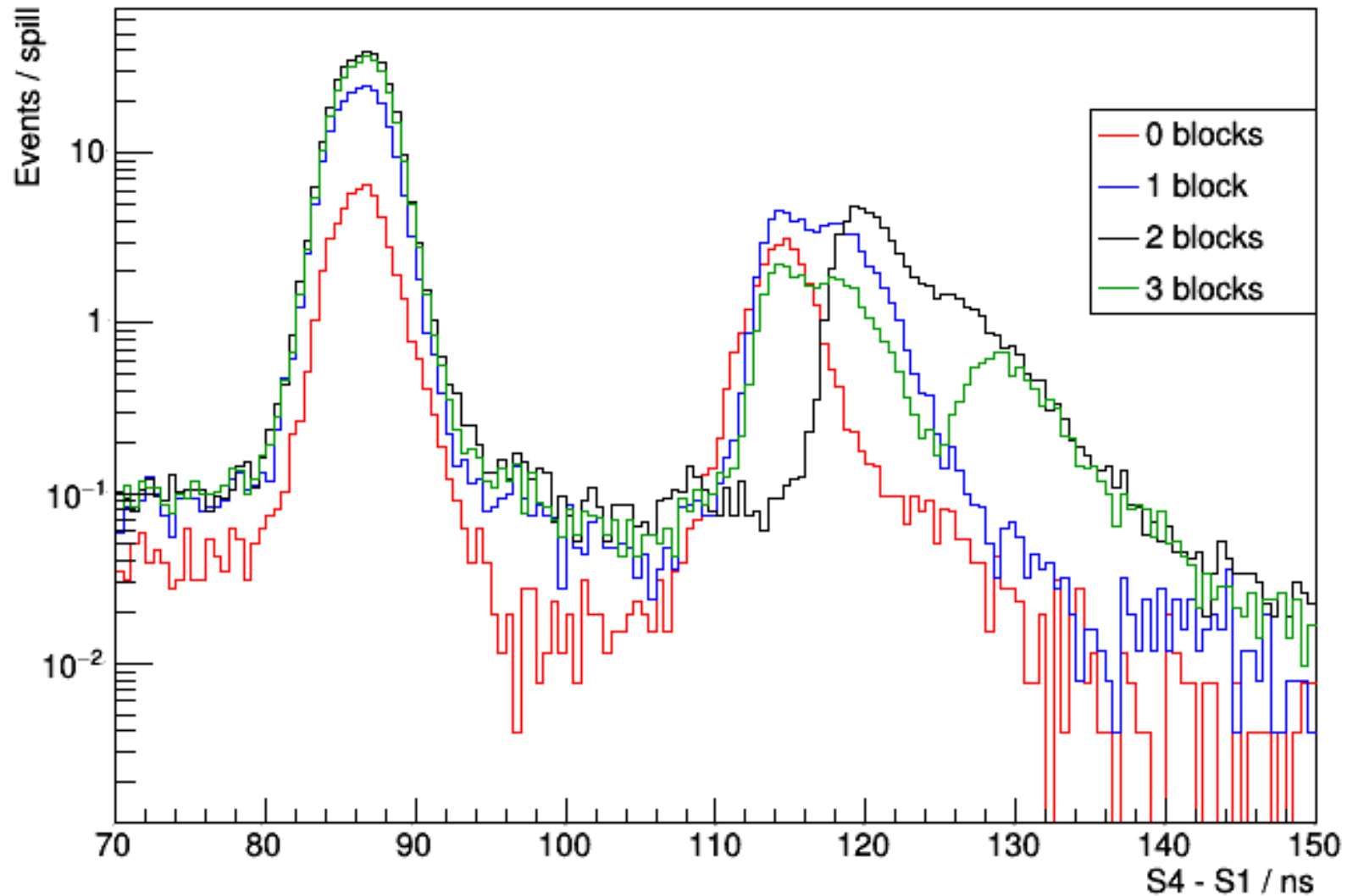
Time of flight for various moderator thicknesses



- Distinct MIP and Proton peaks
- Increased moderator blocks: peaks move further apart and proton peaks spread

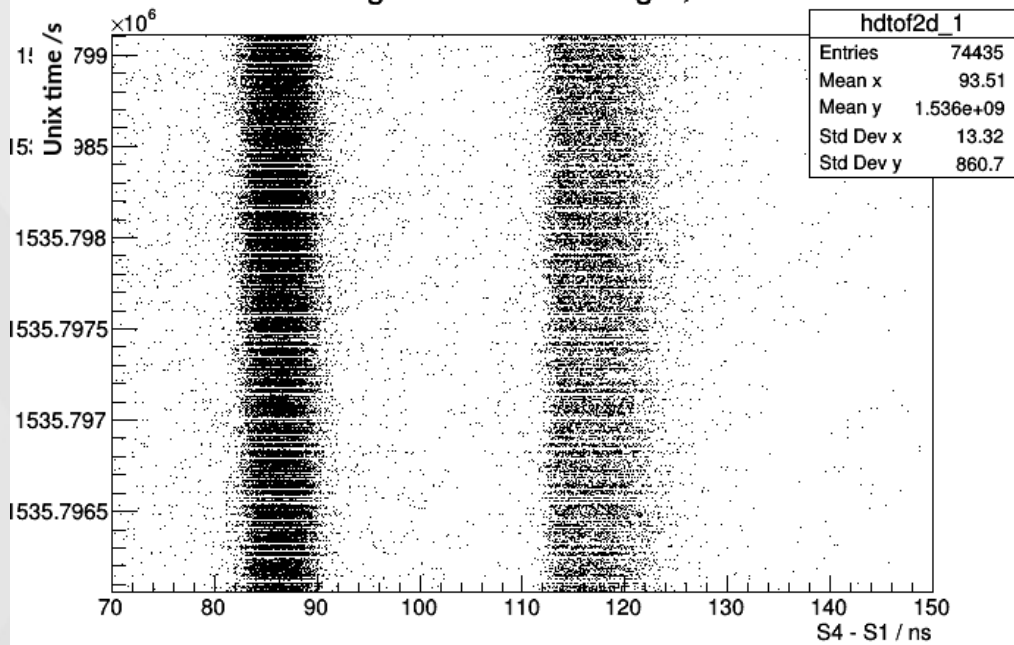
# S4

Time of flight for various moderator thicknesses



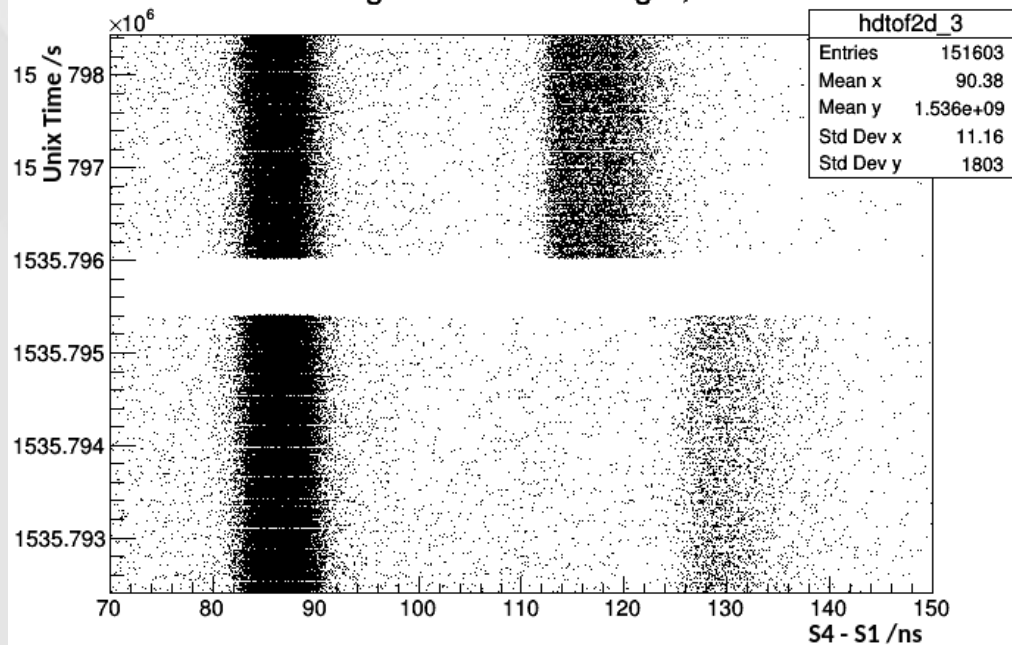
- Distinct MIP and Proton peaks
- Increased moderator blocks: peaks move less far apart (especially for 3 peaks)

Time of flight across run length, 1 blocks



1 Moderator block: pion and proton peak

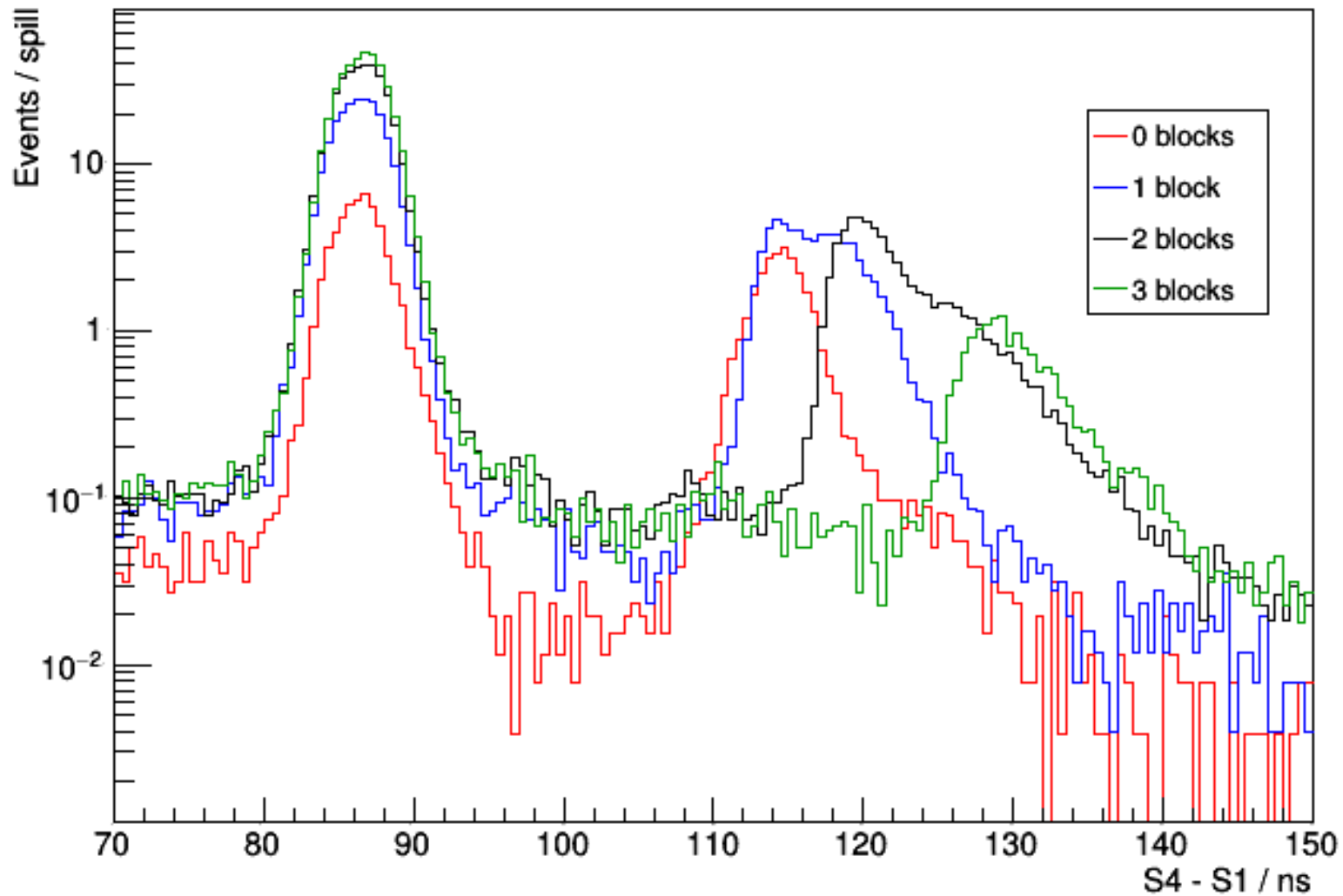
Time of flight across run length, 3 blocks



3 Moderator blocks: run clearly ends and new run starts. Stems from error in definition of run times

# S4

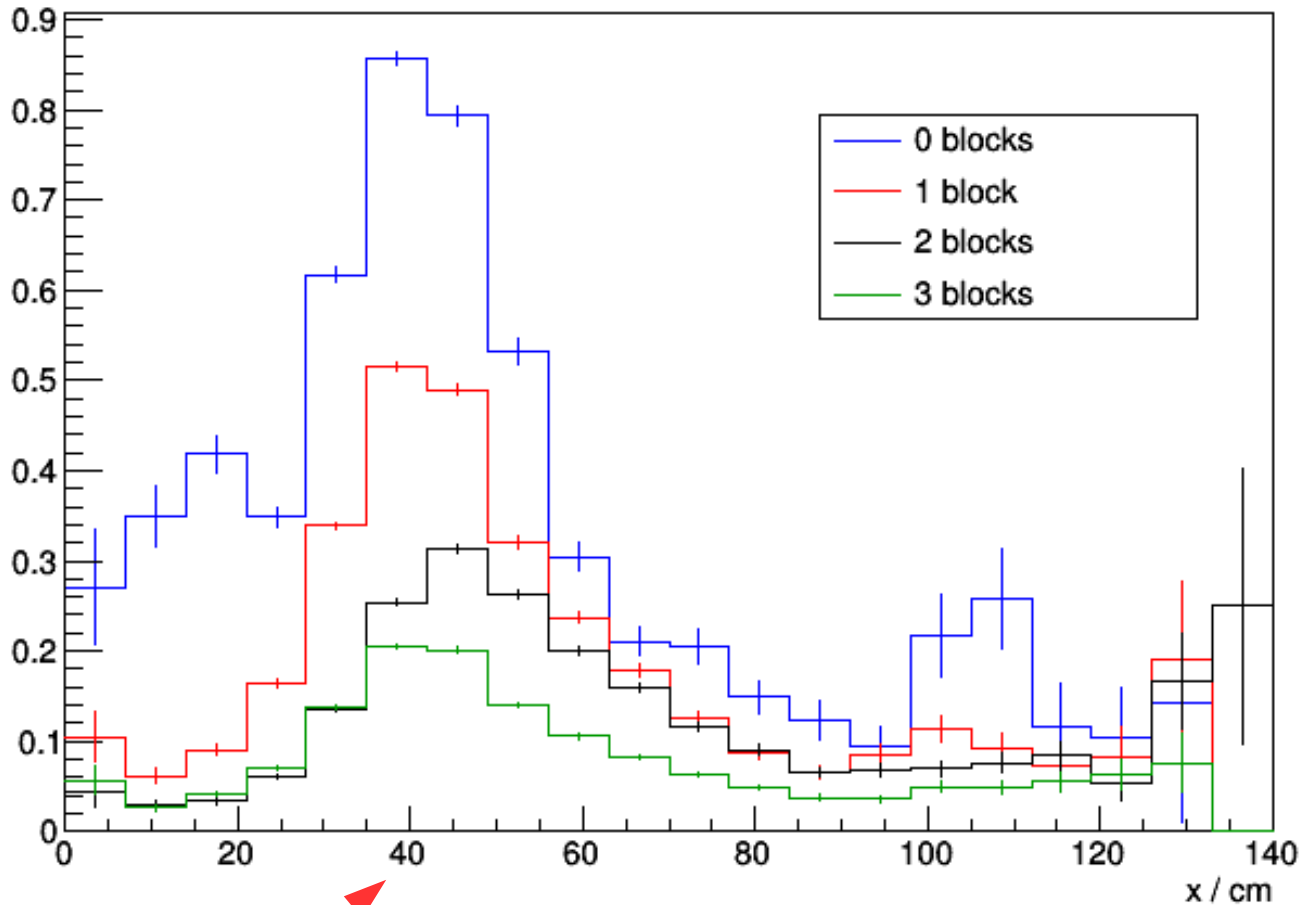
Time of flight for various moderator thicknesses



- With correction for the 3 block case, S4 and S3 are now in very good agreement
- Pion-proton time agrees, and effect of increasing mod blocks agrees
- Some small differences still expected from Geometry

# Proton/MIP peak, S4

Proton/ $(\pi+\mu)$  ratio in S4



From survey data, this corresponds to an angle of 2.09 degrees from the nominal beamline

# Conclusions

- Error in spill counting caused difference between S3 and S4 plots
- This has now been resolved
- S4 Proton/MIP peak showing at pretty low angle, this is unaffected by S3 run issue
- Checking coordinate system
- Will rerun MC with updated survey positions as well