

# **Theory and simulation milestones**

**T. Blackburn, B. King, M. Wing**

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# Theory plan

- T0) NLC in a CP laser pulse in simulation and theory-benchmarked [10/20]
- T1) NBW in a CP laser pulse in simulation and theory-benchmarked [05/21]
- T2) Approximate Trident in CP laser pulse (with no photon polarisation), benchmarked with theory [07/21]
- T3) Photon-polarised NBW in a CP laser pulse in simulation and theory-benchmarked [12/21]
- T4) Photon-polarised NLC in a CP laser pulse in simulation and theory-benchmarked [12/21]
- T5) Trident in in a CP laser pulse in simulation and theory-benchmarked [06/22]
- T6) Repeat CP->LP laser background [12/22]?

# Simulation plan

- S1) NBW sample simulated in experiment using GEANT [07/21]
- S2) Trident sample simulated in experiment using GEANT [09/21]
- S3) Photon-polarised NBW and NLC samples simulated in experiment using GEANT [12/21]
- S4) Large samples of all processes simulated in experiment using GEANT [12/21]
- S5) Trident sample simulated in experiment using GEANT [08/22]
- S6) Large samples of all processes simulated in experiment using GEANT [12/22]

## Dependencies:

- S1 follows T1
  - S2 follows T2
  - S3 and S4 follow T3 and T4
  - S5 follows T5
  - S6 follows T6
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- GEANT simulations to include best knowledge of experiment
  - Merge what needs to be done in GEANT simulations with above

# Theory contingency

- T0) NLC in a CP laser pulse in simulation and theory-benchmarked [10/20]
- T1) NBW in a CP laser pulse in simulation and theory-benchmarked [12/21]
- T2) Approximate Trident in CP laser pulse (with no photon polarisation), benchmarked with theory [12/21]
- T3) Photon-polarised NBW in a CP laser pulse in simulation and theory-benchmarked [06/22]
- T4) Photon-polarised NLC in a CP laser pulse in simulation and theory-benchmarked [06/22]
- T5) Trident in in a CP laser pulse in simulation and theory-benchmarked [09/22]
- T6) Repeat CP->LP laser background [06/23]?

# Simulation contingency

- S1) NBW sample simulated in experiment using GEANT [12/21]
- S2) Trident sample simulated in experiment using GEANT [12/21]
- S3) Photon-polarised NBW and NLC samples simulated in experiment using GEANT [12/21]
- S4) Large samples of all processes simulated in experiment using GEANT [08/22]
- S5) Trident sample simulated in experiment using GEANT [11/22]
- S6) Large samples of all processes simulated in experiment using GEANT [06/23]

# Summary/discussion

- Have a plan for theory and simulation leading to milestones.
- Started from milestones for theory and physics simulations which led to milestones for GEANT simulations.
- Taken into account having a TDR at the end of 2021.
- Have some contingency.
- Define what we want to have in each GEANT simulation ?
- Are there other simulation milestones ?
- Are there other plans that affect the milestones proposed ?