

ATLAS Simulation using Real Data: Embedding and Overlay

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Overlay simulation is an alternate way of modeling pileup and detector noise during digitization

**Option 1:
“Pileup MC” (current default)**

**Simulate hard interaction in MC,
mix with simulated pileup MC during
digi, and add emulated detector noise**

**Option 2:
“Overlay MC”**

**Simulate hard interaction in MC,
overlay “random” RAW data event
during digi to include pileup, CB, noise**

- ATLAS has used overlay for analyses where cavern background is important, and for many Heavy Ion analyses
- Working to extend the overlay technique to do embedding at ATLAS

