Both Platforms
Monolithic integration of light sources, detectors, memory, and electronics
At least four planes of passive photonic waveguides
Wafer-scale processing
Inter-wafer optical links
Memory meeting requirements in Sec. 4.1
Semiconductor Platform
Femtojoule optical receivers with low static power
One million III-V light-sources per wafer integrated with CMOS electronics
Synapses and local plasticity circuits in area 10μm x 10μm
Superconductor Platform
One million III-V *or* group-IV light sources per wafer operating at cryogenic temperature
Interface superconducting electronics with semiconductor light sources
Serial biasing or current recycling for synapses and neurons
Eight planes of Josephson junctions and transformers per wafer with near-zero cross talk