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
III-V integration with electronics (1 million light sources per wafer)
Synapses and local plasticity mechanisms in area 10μm x 10μm
Superconductor Platform
Either III-V integration *or* cryogenic silicon light sources (1 million light sources per wafer)
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