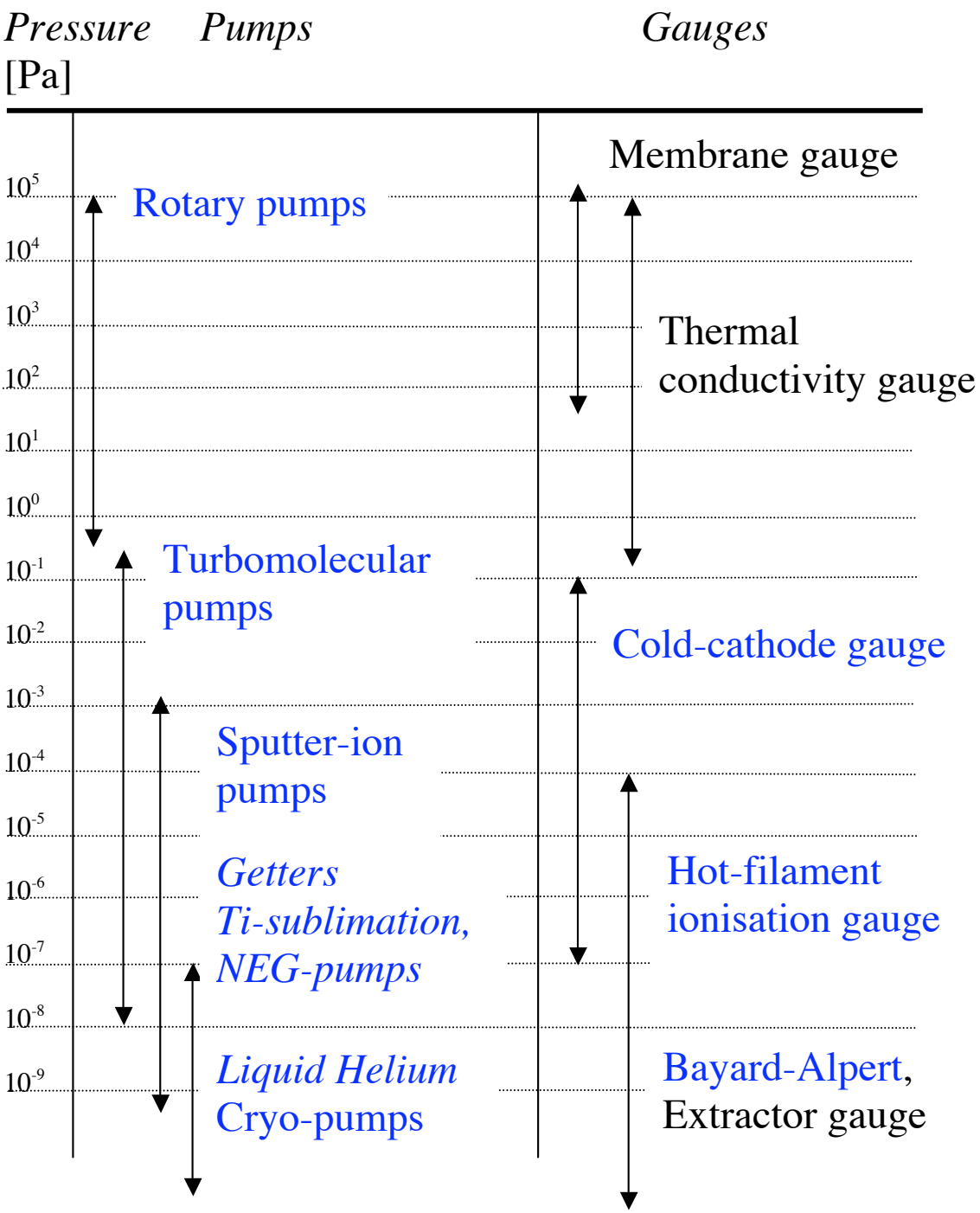Vacuum pumps and vacuum gauges used in large accelerator systems