0.1 Introduction

This chapter defines the foundational principles that govern operation over LINKs in Atomic Ethernet (Æthernet). While traditional protocols prioritize throughput by maximizing raw bit rates, Æthernet focuses on reversible, causally deterministic, and information-conserving communication. Rather than treating bandwidth as a fungible resource, Æthernet embraces a model rooted in equilibrium, token transfer, and fixed-sized transactional units. This framing enables high reliability and high throughput data movement even in failure-prone environments, where every deviation from equilibrium is accounted for and correctable. We describe the architectural consequences of these choices, highlighting symmetry, liveness, and feedback-informed interaction.

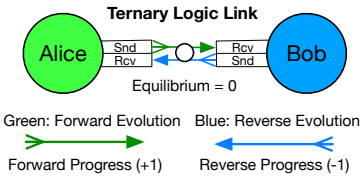

Figure 1: Two CELLs and a LINK with *Conserved Quantities* (CQ) in dynamic equilibrium (Alternating Bit Protocol), epistricted with Ternary Logic