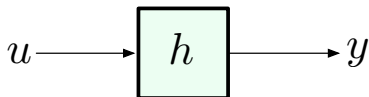


## What Is Stability?



One reasonable definition is as follows:

A linear time-invariant system is *Bounded-Input, Bounded-Output (BIBO) stable* provided either one of the following three equivalent conditions is satisfied:

1. If every bounded input  $u(t)$  results in a bounded output  $y(t)$ , regardless of initial conditions.
2. If the impulse response  $h(t)$  is absolutely integrable:

$$\int_{-\infty}^{\infty} |h(t)| dt < \infty.$$

3. If all poles of the transfer function  $H(s)$  are *strictly stable* (lie in open LHP).