The particles in the system are subject to forces known as the external forces. When these forces are balanced, the system is in stable equilibrium. The external forces are the forces acting on the system from outside, such as gravity, friction, and normal forces. When the external forces are balanced, the system is in a state of equilibrium, and the internal forces are also balanced.

\[ \sum F = 0 \]

Similarly, when the system is in equilibrium, the angular momentum of the system is also balanced.

\[ \sum \mathbf{M} = 0 \]

The above equations show that the system is in equilibrium when the sum of the external forces and the sum of the external torques are both zero. This is true for any system, whether it is in motion or at rest.