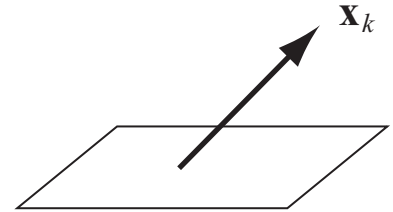


NEWTONIAN THEORY DEFINES THE NEWTONIAN WORLD.

ENTITIES: Particles and Bodies = {systems of particles}

KINEMATICAL LAWS

0th Every particle k has a definite *position* \mathbf{x}_k with respect to a given *reference frame*.

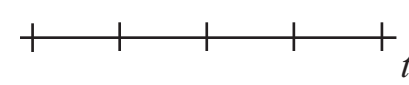


Motion of the particle is represented by a *trajectory* $\mathbf{x}_k(t)$.

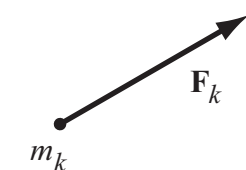


DYNAMICAL LAWS

1st An *inertial system* is a reference system in which every *free particle* has a constant velocity.

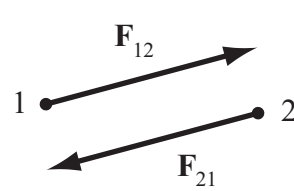


2nd In an inertial system, $\mathbf{F}_k = m_k \frac{d^2 \mathbf{x}_k}{dt^2}$

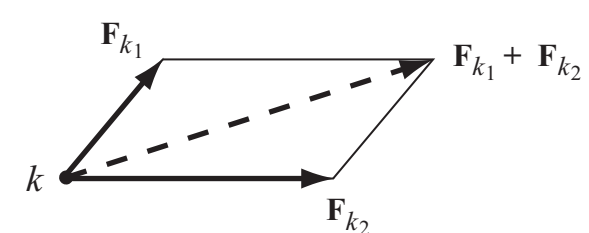


INTERACTION LAWS

3rd $\mathbf{F}_{12} = -\mathbf{F}_{21}$



4th $\mathbf{F}_k = \sum_{j=1}^N \mathbf{F}_{kj}$



5th $\mathbf{F}_{12} = \mathbf{F}(\mathbf{x}_1 - \mathbf{x}_2, \mathbf{v}_1 - \mathbf{v}_2)$