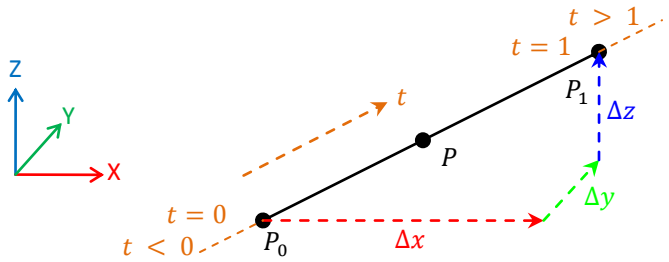
Parametric Line

The parametric equation of a line describes an n-dimensional line in terms of its vector components and an independent parameter t that essentially represents the percentage distance between the two defining points of the line. The general parametric equation for a line is:



$$x = x_0 + (x_1 - x_0) \cdot t$$
$$y = y_0 + (y_1 - y) \cdot t$$
$$z = z_0 + (z_1 - z_0) \cdot t$$

Where P is any point on the line, P_0 is the first of the two endpoints, and t is the independent variable that traverses the distance between the points. A t of 0 will give the first point P_0 and a t of 1 will give the second point P_0. t can run from $-\infty$ to $+\infty$ to define a point anywhere on the line.

An example line is shown below. This line has been sampled with a uniform distribution in t.