Scalar field and vector field

A scalar (i.e. an ordinary number as opposed to a vector) field assigns a scalar value to every point on the space. A good example is a temperature in a room. Temperature field gives you a temperature at every point in the room. (Notice that a temperature doesn't have any direction, so it is not a vector but a scalar.)

Similarly, a vector field assigns a vector value to every point on the space. A good example is the velocity field of wind. At every point in the room, the air has a specific wind velocity. (Remember that velocity is a vector, since it has both magnitude and direction.) The velocity field assigns a wind velocity to every point in the room concerned. For an example, see Fig.1. Scalar fields and vector fields are often used in physics.

Summary

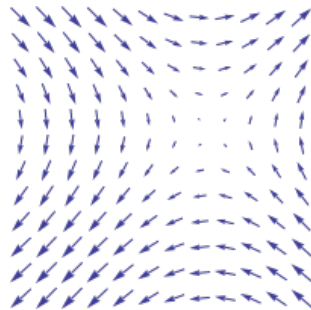- A scalar field assigns a scalar value to every point on the space, and a vector field assigns a vector value to every point on the space.

Figure 1: A vector field in 2-dimension