1. Inverse transformation matrix

Assumption: normal transformation matrix is:



Then the inverse transformation matrix is:



1. Definition of transformation matrix

Transformation matrix 

 is the reference coordinates system,

 is new coordinates system after transformation,

 means transformation of  in reference of .

 (1)

 is one **point** in the  system, with this transformation get the point  in  system.

Suppose a new system  and a point  in this system,

The transformation of this point in reference of  system will be:

 (2)

Transformation of  in reference of  will be:

 (3)

Which means:

 (4)

The transformation of transformed system  in reference of reference system .