1. **the specific form of**

From to is a process of fixed-axis rotation, with the unit vector in the direction of the rotation axis given by , and the rotation angle already specified. First, provide the coordinate representation of in .



The value of is:



Define two dimensionless length quantities:



Reference [1] provides the coordinate transformation matrix for general axis rotation as follows:



In the equation, , and represent the coordinate components of the unit direction vector of the rotation axis, is the rotation angle, and and are shorthand notations for and respectively.

The expression for can be obtained as:



To determine the undetermined terms in the last column of , further quantitative analysis of the specific axis rotation is needed. This analysis will involve considering the displacement of to determine the final form of the transformation matrix.

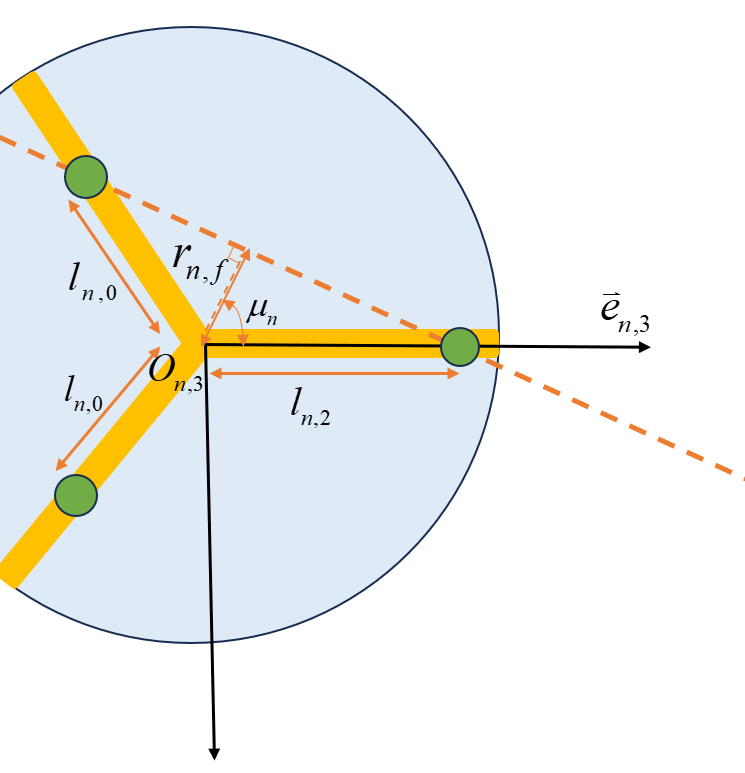
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Fig.A pseudo-rotation illustration.

As shown in *Fig.A* ,the value of can be determined based on the area equation of triangle .



Then:



The displacement vector of is represented in the coordinates of as:



The vector corresponds to the three undetermined terms of from top to bottom, with each coordinate component from left to right.