

Copilot

In the context of spherical coordinates, `theta` and `phi` are often used to represent angles that define a direction in 3D space. However, the exact meaning of these angles can vary depending on the convention being used.

In the physics convention:

- `theta` (θ) is the angle between the positive z-axis and the line segment OP from the origin O to the point P in 3D space. This angle is also known as the polar angle.
- `phi` (ϕ) is the angle between the positive x-axis and the projection of the line segment OP onto the xy-plane. This angle is also known as the azimuthal angle.

In the mathematics convention, the roles of `theta` and `phi` are often swapped.

In your code, `theta` and `phi` are used to define the orientation of the largest axis of the ellipsoid in 3D space. The exact meaning of these angles would depend on how you interpret them in your code. If you interpret `theta` as the angle going from the x-axis to the y-axis, and `phi` as the angle going from the xy-plane to the z-axis, this would be consistent with the physics convention.

However, please note that in the `Rotation.from_euler` function in the `scipy.spatial.transform` module, the 'zyx' sequence of rotations is used. This means that the rotation is performed in 3 steps: first around the z-axis, then around the y-axis, and finally around the x-axis. The angles for these rotations are given by `key_theta`, `key_phi`, and `np.zeros_like(key_theta)`, respectively. This sequence of rotations might not correspond directly to the interpretation of `theta` and `phi` that you described.

I hope this clarifies things! Let me know if you have any other questions. 😊