|  |  |  |
| --- | --- | --- |
| cos(Θ)\*cos(Ψ) | -cos(Θ)\*sin(Ψ) | sin(Θ) |
| cos(Φ)\*sin(Ψ)+cos(Ψ)\*sin(Φ)\*sin(Θ) | cos(Φ)\*cos(Ψ)-sin(Φ)\*sin(Θ)\*sin(Ψ) | -cos(Θ)\*sin(Φ) |
| sin(Φ)\*sin(Ψ)-cos(Φ)\*cos(Ψ)\*sin(Θ) | cos(Ψ)\*sin(Φ)+cos(Φ)\*sin(Θ)\*sin(Ψ) | cos(Φ)\*cos(Θ) |

^ Converts body to world frame ^

|  |  |  |
| --- | --- | --- |
| cos(Θ)\*cos(Ψ) | cos(Φ)\*sin(Ψ)+cos(Ψ)\*sin(Φ)\*sin(Θ) | sin(Φ)\*sin(Ψ)-cos(Φ)\*cos(Ψ)\*sin(Θ) |
| -cos(Θ)\*sin(Ψ) | cos(Φ)\*cos(Ψ)-sin(Φ)\*sin(Θ)\*sin(Ψ | cos(Ψ)\*sin(Φ)+cos(Φ)\*sin(Θ)\*sin(Ψ) |
| sin(Θ) | -cos(Θ)\*sin(Φ) | cos(Φ)\*cos(Θ) |

^ Converts world to body frame ^