Course Project Part 1: Intro, Attitude Parameterization and Kinematics

Table of Contents

AEM 4305: Spacecraft Dynamics Garrett Ailts

Test DCM2Quat

```
C_ba = [0.8995 0.3870 -0.2026;
        -0.3201 0.8995 0.2974;
        0.2974 -0.2026 0.9330];
qtest = [0.1294 0.1294 0.1830 0.9659]';
fprintf('DCM2Quat should return:\n');
disp(qtest);
q = DCM2Quat(C_ba);
fprintf('DCM2Quat returns:\n');
disp(q);
if ismembertol(qtest,q,1e-4)
    fprintf('Success!\n');
else
    fprintf('Failure!\n');
end
```

```
DCM2Quat should return:
    0.1294
    0.1294
    0.1830
    0.9659

DCM2Quat returns:
    0.1294
    0.1294
    0.1830
    0.9659

Success!
```

Test DCM2Euler321

```
phit = 0.3086; thetat = 0.2040; psit = 0.4063;
fprintf('DCM2Euler321 should return:\n');
fprintf('phi = %.4f, theta = %.4f, psi = %.4f\n',phit,thetat,psit);
[psi, theta, phi] = DCM2Euler321(C_ba);
fprintf('DCM2Euler321 returns:\n');
```

```
fprintf('phi = %.4f, theta = %.4f, psi = %.4f\n',phi,theta,psi);
etest = [phit thetat psit]'; eactual = [phi theta psi]';
if ismembertol(etest,eactual,1e-4)
    fprintf('Success!\n');
else
    fprintf('Failure!\n');
end
```

```
DCM2Euler321 should return:
phi = 0.3086, theta = 0.2040, psi = 0.4063
DCM2Euler321 returns:
phi = 0.3086, theta = 0.2040, psi = 0.4063
Success!
```

Published with MATLAB® R2019b