Subject: Re: IDLgrModel, rotation angles
Posted by James Kuyper on Mon, 23 Feb 2004 18:27:40 GMT
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lyubo wrote:
>
> Hello,
>
> I have a transformation matrix and I must find the amount of rotation
> in degrees. How can I do that? Any help would be appreciated.
>
> Thank you,
>
> Lyubo

The eigenvalues of a pure rotation matrix are

EXP(COMPLEX(0,-theta))
1.0
EXP(COMPLEX(0,theta))

where theta is the rotation angle in radians. Therefore,

!RADEG*MAX(IMAGINARY(ALOG(HQR(ELMHESS(rot)))))

Will give you back the rotation angle of rot in degrees.

Subject: Re: IDLgrModel, rotation angles
Posted by Rick Towler on Mon, 23 Feb 2004 19:36:54 GMT
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"lyubo" wrote...

> I have a transformation matrix and I must find the amount of rotation
> in degrees. How can I do that? Any help would be appreciated.

If James answer doesn't satisfy you, take a look at the Matrix and Quaternion FAQ, question 37. A copy is available here:

http://skal.planet-d.net/demo/matrixfaq.htm#Q37

-Rick

Subject: Re: IDLgrModel, rotation angles

lyubo wrote:
>
> Hello,
>
> I have a transformation matrix and I must find the amount of rotation
> in degrees. How can I do that? Any help would be appreciated.
>

Forget previous reply; I was being too complicated. A much simpler expression for the rotation angle in degrees is:

```
!RADEG*ACOS(0.5D*(TRACE(rot)-1.0D))
```

Warning: if the rotation angle is small, the trace might exceed 3.0 due to round-off error; if it's close to 180 degrees, the trace might be less than -3.0, for the same reason. If you're sure that roundoff is the only possible cause of such a problem, the following modification avoids that problem:

```
!RADEG*ACOS((0.5D*(TRACE(rot)-1.0D)) <1.0 >(-1.0))
```