Purpose Feedback interconnection of two blocks described by polynomial matrix fractions.

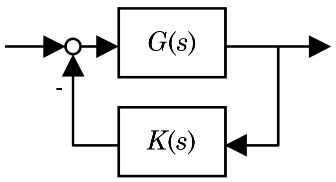
Syntax

```
[numClosed,denClosed] = feedback(numg,deng,numk,denk)
[numClosed,denClosed] = feedback(numg,deng,numk,denk,'lr')
[numClosed,denClosed] = feedback(numg,deng,numk,denk,'rl')
```

Description The command

```
[numClosed,denClosed] = feedback(numg,deng,numk,denk)
```

computes the closed loop numerator and denominator polynomial matrices for the standard feedback control configuration



where `G` is described as left matrix fraction **`G = deng`**$^{-1}$**`numg`** and `K` is described as right matrix fraction and **`K = numk denk`**$^{-1}$ and negative feedback is considered. This command is the same as

```
[numClosed,denClosed] = feedback(numG,denG,numK,denK,'lr')
```

whereas the command

```
[numClosed,denClosed] = feedback(numG,denG,numK,denK,'rl')
```

considers the right matrix fraction description of G(s) and left matrix fraction description of K(s), i.e. **`G = numg deng-1`** and **`K = denk-1numk`**.

feedback

Examples

Let the plant be a minimal realization of the transfer matrix

$$G = \begin{bmatrix} 1-2d & 0 \\ -1+d & 1 \end{bmatrix}^{-1} \begin{bmatrix} d \\ 0 \end{bmatrix}$$

and the controller be a minimal realization of the transfer matrix

$$K = \begin{bmatrix} 1 & 0 \end{bmatrix} \begin{bmatrix} 0 & 1 \\ 1 & -1+d \end{bmatrix}^{-1}$$

Calculate the closed-loop polynomial matrix fraction description.

Algorithm

Diagnostics

See also

`series`	Value set for an interval polynomial.
`parallel`	Value set for a polytope of polynomials.