

[3.5] Unexpected *NewMat()* operation in Cylindrical and Spherical vector modes

If you use *NewMat*(1,2) to make a new matrix in the Rectangular vector format mode, you get [[0,0]] as expected. But if the vector format mode is set to Cylindrical or Spherical, you'll get

$$[[0, \text{YRDP}^\wedge(0, 0)]]$$

While correct, this is hardly useful. In fact it will cause errors when used as an argument to programs that expect numeric matrix elements.

You will get similar results for sizes of (2,1), (1,3) and (3,1).

The work-around is to make sure you are in rectangular Vector mode when you create the matrix.

This table summarizes the results of different Complex and Vector formats, and the resulting matrix that is created.

Vector Format	Complex Format	newMat() argument	Result
RECTANGULAR	REAL, RECTANGULAR or POLAR	(1,2)	[[0,0]]
"	"	(2,1)	[[0][0]]
"	"	(1,3)	[[0,0,0]]
"	"	(3,1)	[[0][0][0]]
CYLINDRICAL	REAL, RECTANGULAR or POLAR	(1,2)	[[0,RP]]
"	"	(2,1)	[[0][RP]]
"	"	(1,3)	[[0,RP,0]]
"	"	(3,1)	[[0][RP][0]]
SPHERICAL	REAL	(1,2)	[[0,RP]]
"	"	(2,1)	[[0][RP]]
"	"	(1,3)	"Non-real result"
"	"	(3,1)	"Non-real result"
"	RECTANGULAR or POLAR	(1,2)	[[0,RP]]
"	"	(2,1)	[[0][RP]]
"	"	(1,3)	[[0,RP,SPP]]
"	"	(3,1)	[[0],[RP],[SPP]]

where RP is

$$\text{YRDP}^\wedge(0, 0)$$

and SPH is

$$\angle \frac{\pi}{2} - \frac{\sin(\infty) \cdot \pi}{2} + \text{undef} \cdot i$$

and SPP is

$$\angle e \left[\frac{\text{sign}(0) \cdot \pi}{2} - \frac{\sin(\infty) \cdot \pi}{2} \right] \cdot i \cdot \text{undef}$$