Exploring Figures in MATLAB Online

Created by Math Works for Structural Dynamics

Math Works

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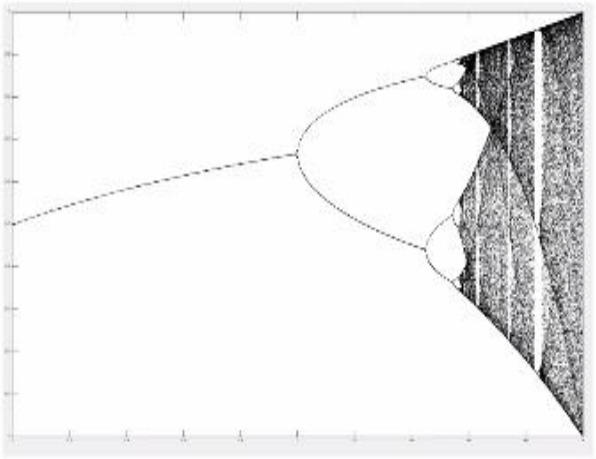

After we generate a new visualization.

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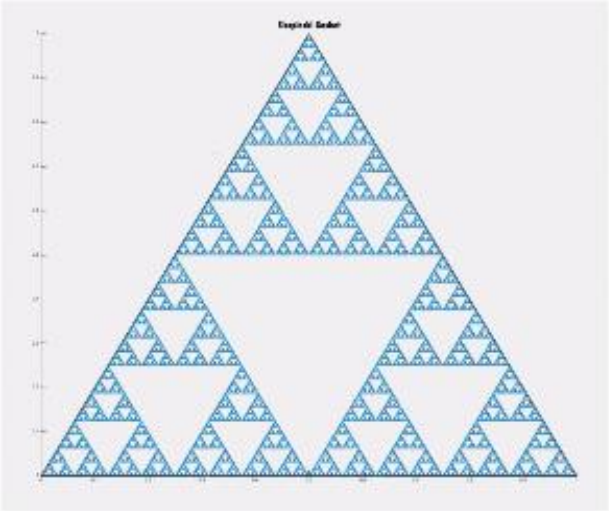

We often want to explore it say by.

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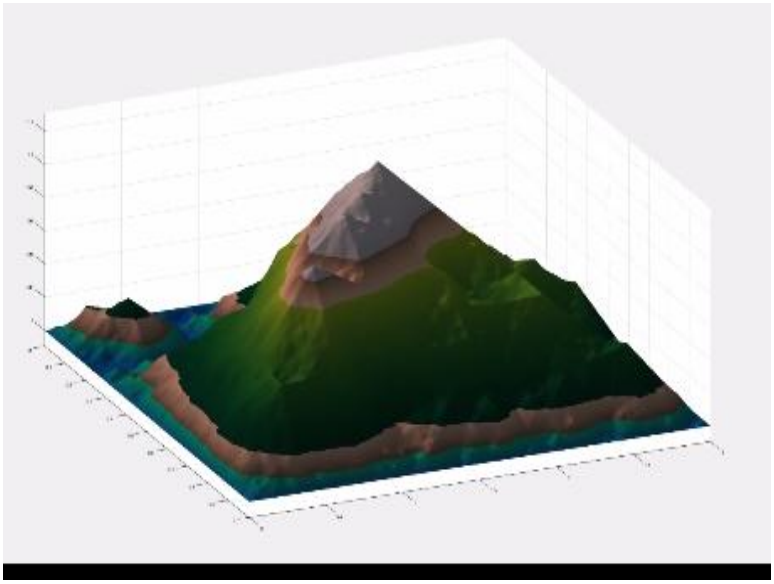

Getting a closer look at an area of interest or by rotating it to see what is on the other side.

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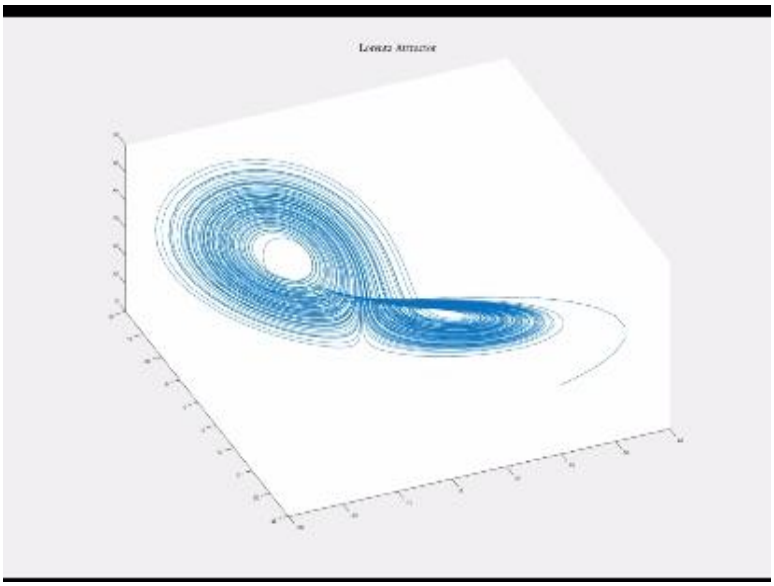

For example we may want to visualize the behavior of a new satellite orbit.

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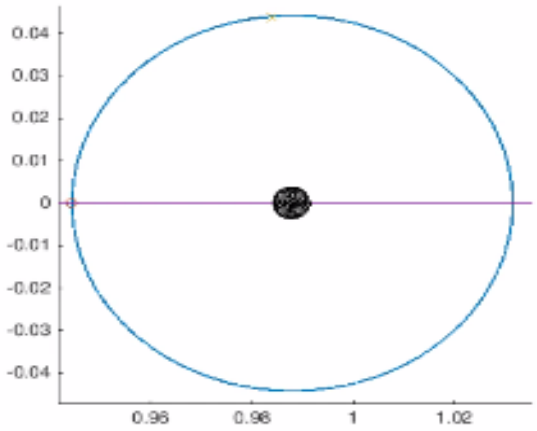

To make sure it meets requirements like boundedness, or periodicity.

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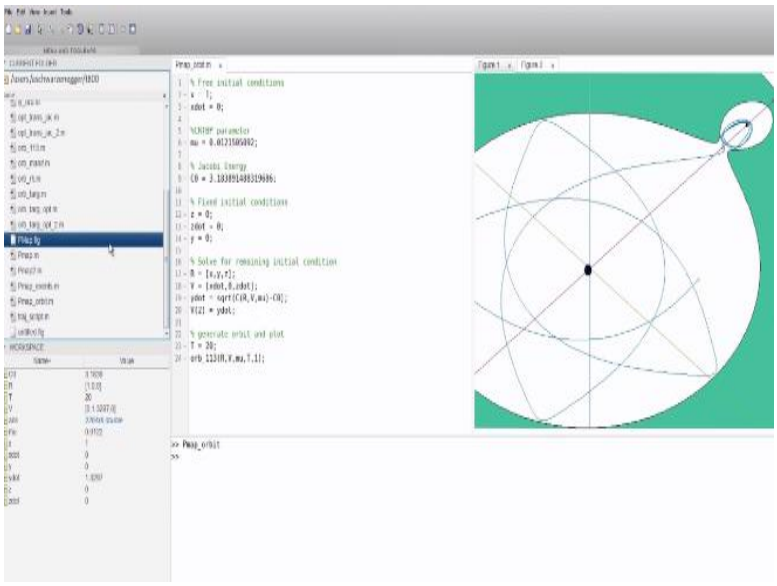

Let us see how we can use the tools for exploring figures in MATLAB online to find a periodic satellite orbit near the moon, to illustrate our problem we will use some existing code to generate and plot an example orbit that begins close to the moon because of the scale it is hard to see the details of the orbit to get a closer look will select the zoom in button located in the figure tab now we can see that the satellite does circle the moon several times but its orbit is irregular.

Even worse it looks like the satellite is eventually pulled away from the moon entirely we can confirm this by using the pain control which allows us to follow the trajectory while remaining at the same zoom level, it is clear that this s not the orbit we are looking for, to help us find a periodic orbit will use an alternative way of visualizing orbits called a pawn car a map, let us open one that we have already created.

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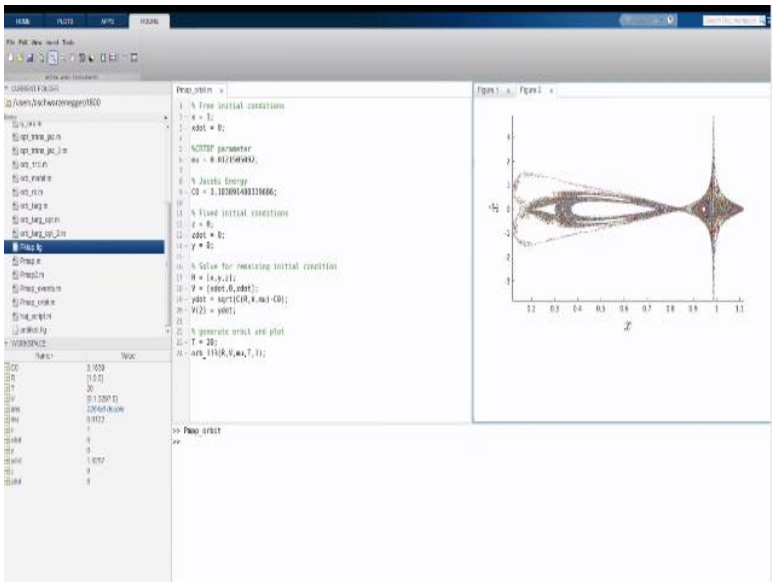

Pan Careh Maps often contain patterns resembling concentric rings.

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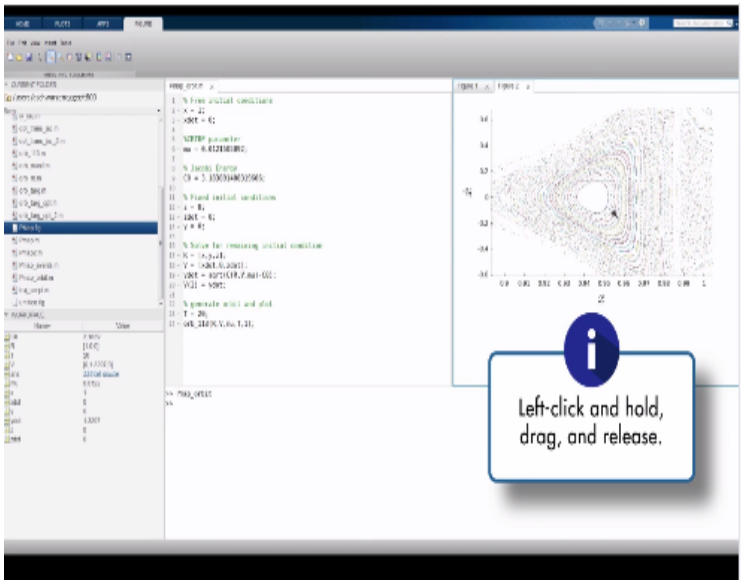

Let us take a closer look using the Box zoom feature ooh!.

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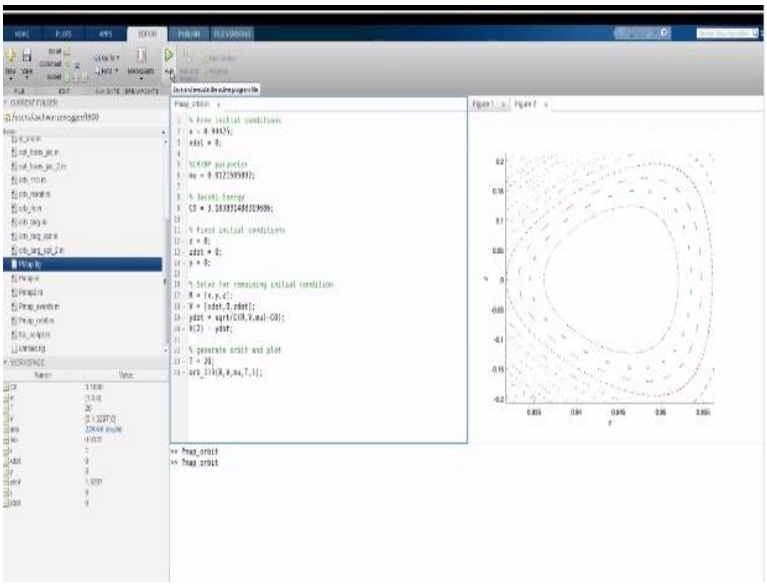

It looks like we found one, the trick is to estimate the location of the Ring Center which corresponds to the position and velocity values of a periodic orbit we can then generate a new orbit using these values .

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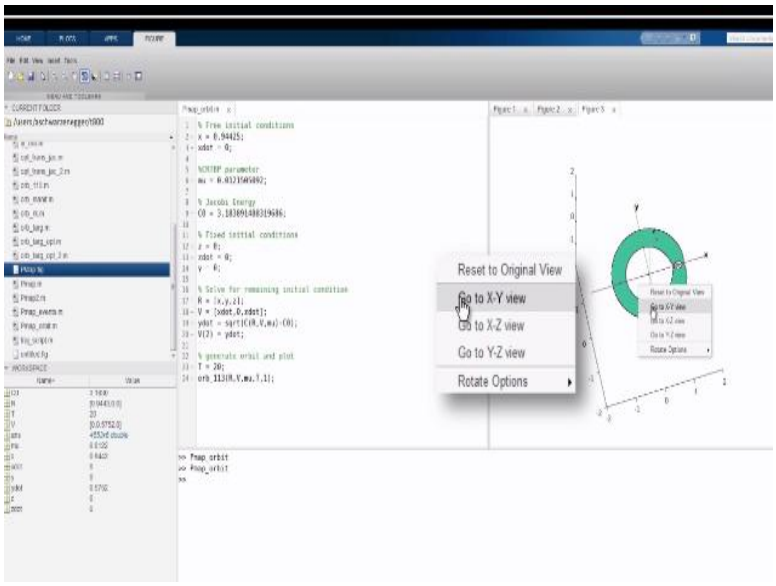

Well that looks promising to confirm that this orbit is really periodic will use the rotation control to obtain an overhead view, since the orbit lies in the XY plane it is easier to right-click and select the view we want.

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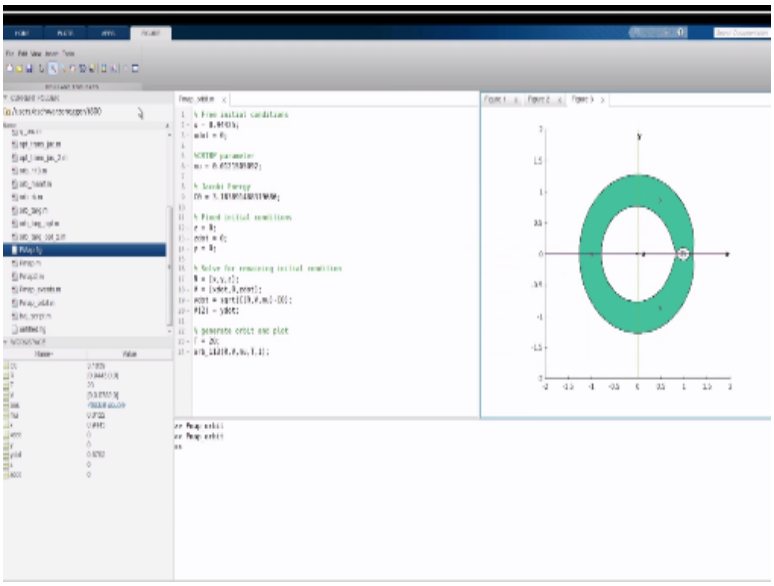

Rather than rotating the axes manually after zooming in.

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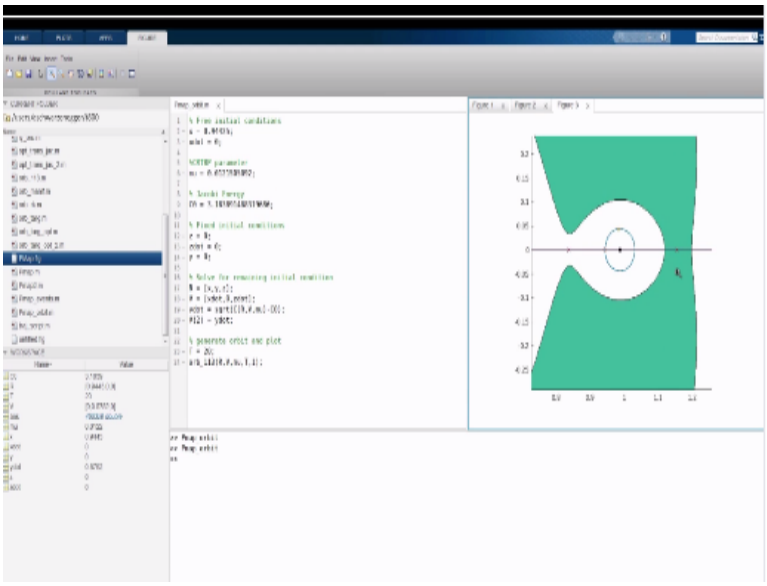

It looks like we found what we are looking for now it is your turn to use the tools located inside the figure tab to explore your own visualizations.

MathWorks