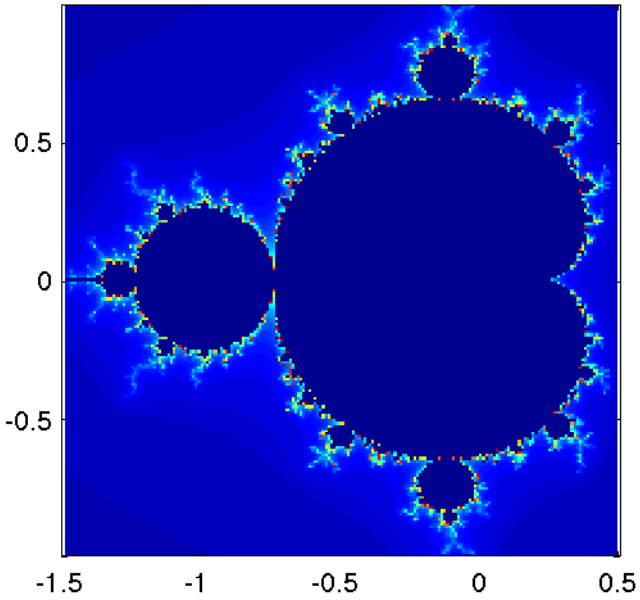
Homework 8. *Going back to the Mandelbrot set calculation, we can keep a matrix that informs us of the step at which each element has become too large. Let's call it* `Iter` *and agree that a zero value corresponds to "not too large yet" and a non-zero value will be the iteration number at which the element has become big (absolute value greater than 10). At each step we update only these elements of* `Zn` *that are still small (those that correspond to* `~Iter` *being true), then find out which are the new big elements (*`abs(Zn)>10` *and* `~Iter`*) and set the corresponding values of* `Iter` *to the iteration number (from the for loop). Notice that using* `~` *on a matrix of numbers returns* `true` *for the elements that are zero and* `false` *for those that are not zero. After 100 iterations you need to plot the results. Since for the locations that did not converge we have the number of iterations it needs to reach size 10, we can make a nicer plot than the black-and-white plot from before. For this we can use:*

```
p=pcolor(X,Y,Iter);
set(p,'edgecolor','none')
axis equal
```

We only need to plot once, after all the iterations have happened. Notice how much faster this is than the nested loops from before. Your result should look like this:



Some ideas for "extra credit":

- *Try zooming into places of interest, see how the fractal is "self similar"?*
- *Change the number of iterations and see how things change*

18.S997 Introduction To MATLAB Programming

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