

```
In [57]: import numpy as np
```

```
In [59]: ones_arr = np.ones((3,3))
```

```
In [261...]: ones_arr
```

```
Out[261...]: array([[1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1]])
```

```
In [263...]: ones_arr = np.ones((5,5),dtype=int)
```

```
In [265...]: ones_arr
```

```
Out[265...]: array([[1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1],  
                   [1, 1, 1, 1, 1]])
```

```
In [267...]: ones_arr * 255
```

```
Out[267...]: array([[255, 255, 255, 255, 255],  
                   [255, 255, 255, 255, 255],  
                   [255, 255, 255, 255, 255],  
                   [255, 255, 255, 255, 255],  
                   [255, 255, 255, 255, 255]])
```

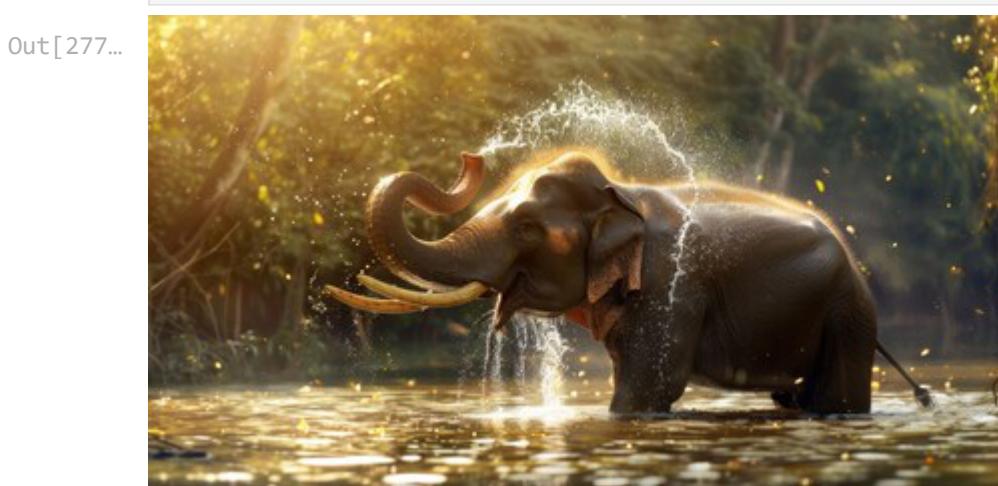
```
In [269...]: import matplotlib.pyplot as plt
```

```
In [271...]: %matplotlib inline
```

```
In [273...]: from PIL import Image
```

```
In [275...]: ele_image = Image.open(r'C:\python\28th sep_files\ele.jpg')
```

```
In [277...]: ele_image
```



```
In [279...]: type(ele_image)
```

```
Out[279... PIL.JpegImagePlugin.JpegImageFile
```

```
In [281... ele_arr = np.asarray(ele_image)
ele_arr
```

```
Out[281... array([[[223, 196, 65],
                   [220, 195, 79],
                   [209, 185, 85],
                   ...,
                   [161, 116, 61],
                   [130, 89, 33],
                   [106, 68, 19]],

                  [[240, 211, 83],
                   [228, 201, 86],
                   [211, 186, 86],
                   ...,
                   [150, 107, 52],
                   [126, 87, 30],
                   [104, 70, 22]],

                  [[246, 215, 88],
                   [232, 201, 85],
                   [214, 186, 86],
                   ...,
                   [139, 100, 43],
                   [113, 78, 22],
                   [111, 80, 33]],

                  ...,

                  [[ 90,  88,  63],
                   [ 91,  87,  62],
                   [ 91,  86,  64],
                   ...,
                   [ 66,  55,  27],
                   [ 66,  55,  27],
                   [ 66,  55,  27]],

                  [[114, 111, 80],
                   [116, 112, 83],
                   [117, 113, 84],
                   ...,
                   [ 63,  54,  25],
                   [ 64,  53,  25],
                   [ 65,  54,  26]],

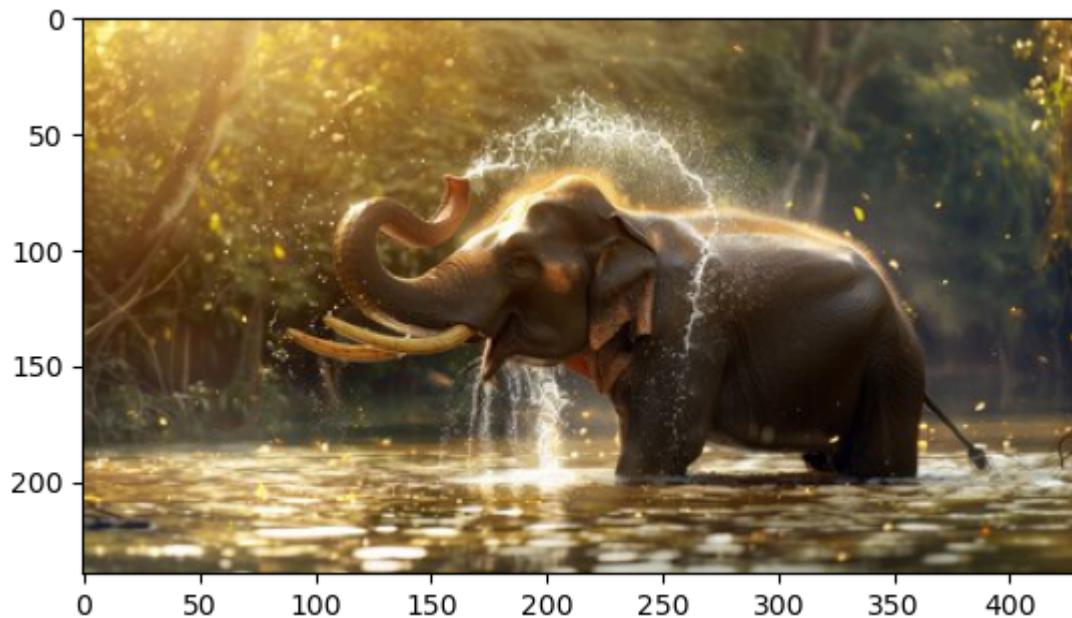
                  [[124, 121, 86],
                   [127, 124, 91],
                   [129, 124, 94],
                   ...,
                   [ 59,  50,  19],
                   [ 60,  51,  20],
                   [ 61,  50,  20]]], dtype=uint8)
```

```
In [283... type(ele_arr)
```

```
Out[283... numpy.ndarray
```

```
In [285... plt.imshow(ele_arr)
```

```
Out[285... <matplotlib.image.AxesImage at 0x19a0aea1820>
```



```
In [286... ele_arr.shape
```

```
Out[286... (240, 429, 3)
```

```
In [289... ele_red = ele_arr.copy()
```

```
In [291... ele_red
```

```
Out[291... array([[[223, 196, 65],  
   [220, 195, 79],  
   [209, 185, 85],  
   ...,  
   [161, 116, 61],  
   [130, 89, 33],  
   [106, 68, 19]],  
  
   [[240, 211, 83],  
   [228, 201, 86],  
   [211, 186, 86],  
   ...,  
   [150, 107, 52],  
   [126, 87, 30],  
   [104, 70, 22]],  
  
   [[246, 215, 88],  
   [232, 201, 85],  
   [214, 186, 86],  
   ...,  
   [139, 100, 43],  
   [113, 78, 22],  
   [111, 80, 33]],  
  
   ...,  
  
   [[ 90, 88, 63],  
   [ 91, 87, 62],  
   [ 91, 86, 64],  
   ...,  
   [ 66, 55, 27],  
   [ 66, 55, 27],  
   [ 66, 55, 27]],  
  
   [[114, 111, 80],  
   [116, 112, 83],  
   [117, 113, 84],  
   ...,  
   [ 63, 54, 25],  
   [ 64, 53, 25],  
   [ 65, 54, 26]],  
  
   [[124, 121, 86],  
   [127, 124, 91],  
   [129, 124, 94],  
   ...,  
   [ 59, 50, 19],  
   [ 60, 51, 20],  
   [ 61, 50, 20]]], dtype=uint8)
```

```
In [293... ele_arr == ele_red
```

```
Out[293... array([[[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   ...,

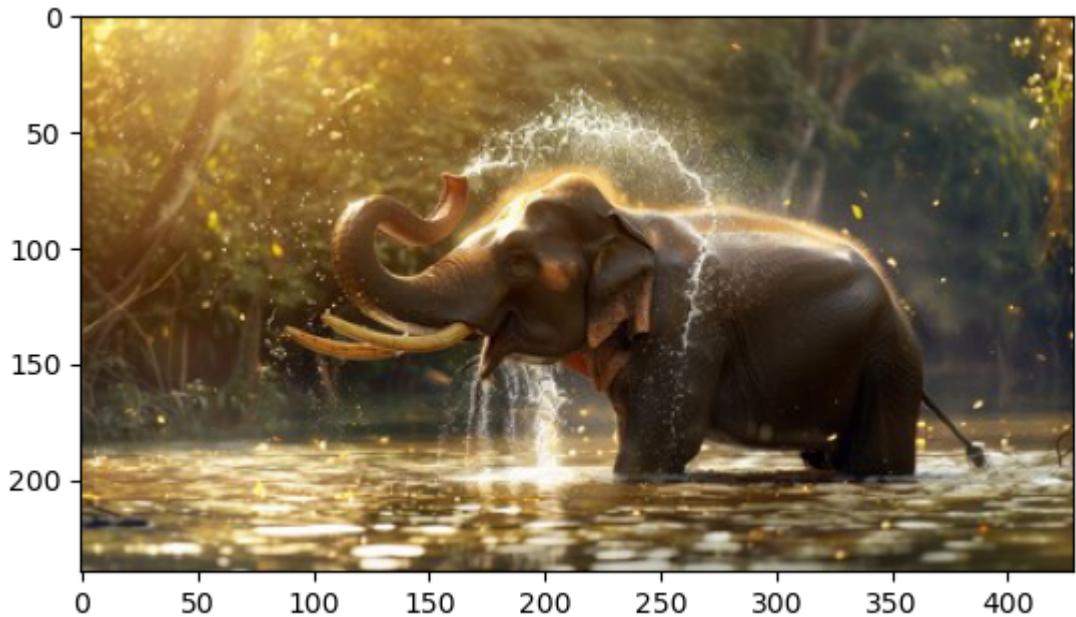
   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]],

   [[ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True],
   ...,
   [ True,  True,  True],
   [ True,  True,  True],
   [ True,  True,  True]]])
```

```
In [295... plt.imshow(ele_arr)
```

```
Out[295... <matplotlib.image.AxesImage at 0x19a0af14440>
```

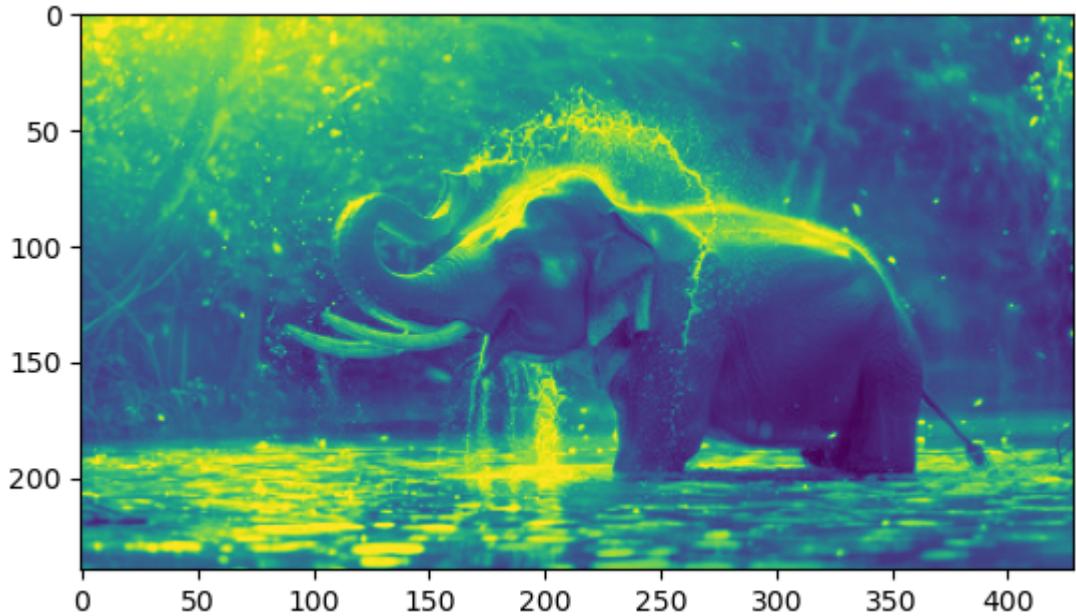


```
In [296... ele_red.shape
```

```
Out[296... (240, 429, 3)
```

```
In [299... plt.imshow(ele_red[:, :, 0])
```

```
Out[299... <matplotlib.image.AxesImage at 0x19a0af7c1a0>
```

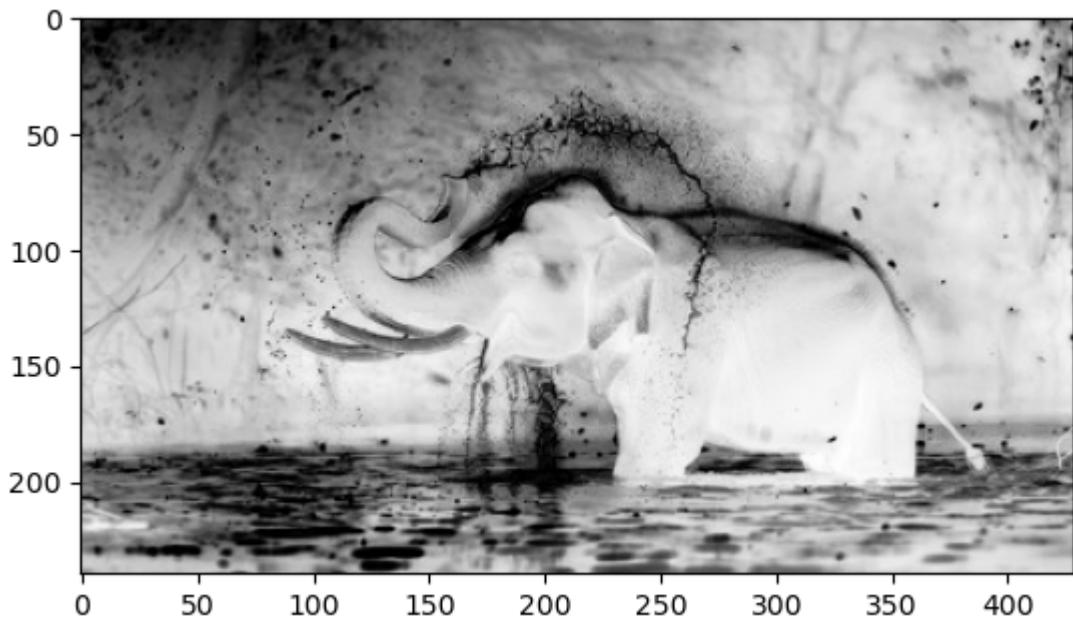


```
In [300... ele_red[:, :, 0]
```

```
Out[300... array([[223, 220, 209, ..., 161, 130, 106],
       [240, 228, 211, ..., 150, 126, 104],
       [246, 232, 214, ..., 139, 113, 111],
       ...,
       [ 90,   91,   91, ...,   66,   66,   66],
       [114, 116, 117, ...,   63,   64,   65],
       [124, 127, 129, ...,   59,   60,   61]], dtype=uint8)
```

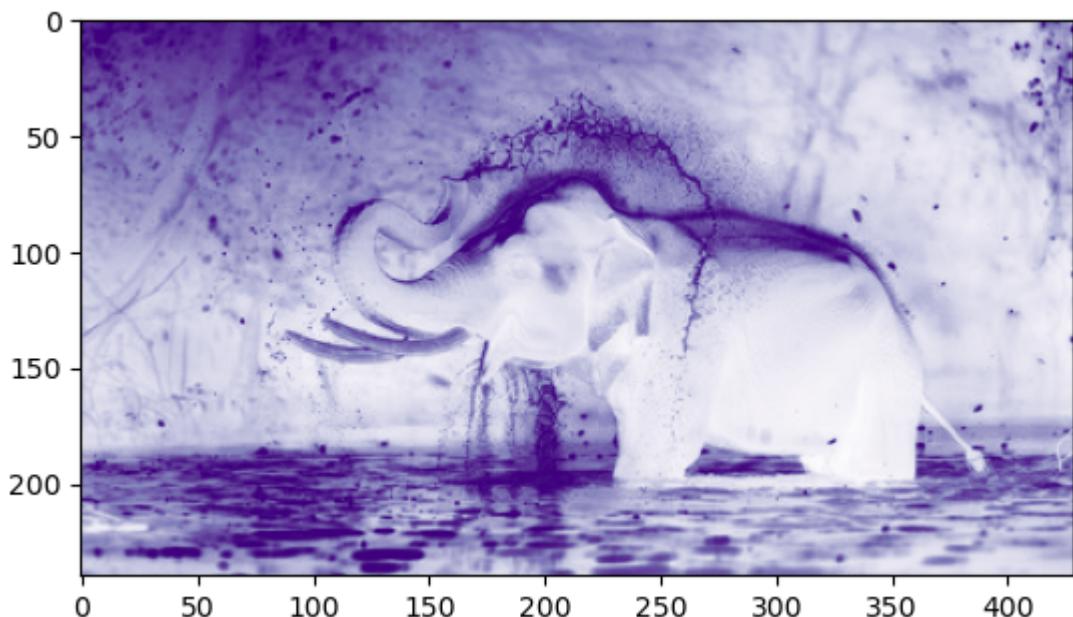
```
In [303... plt.imshow(ele_red[:, :, 0], cmap='Greys')
```

```
Out[303... <matplotlib.image.AxesImage at 0x19a0afcc620>
```



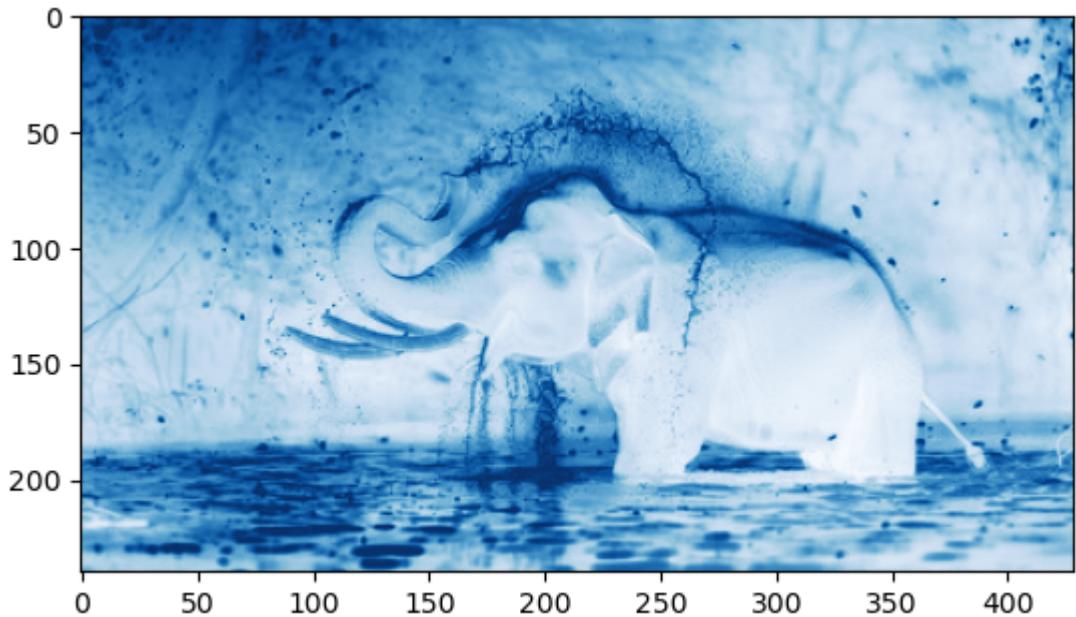
```
In [304... plt.imshow(ele_red[:, :, 0], cmap='Purples')
```

```
Out[304... <matplotlib.image.AxesImage at 0x19a0b03bad0>
```



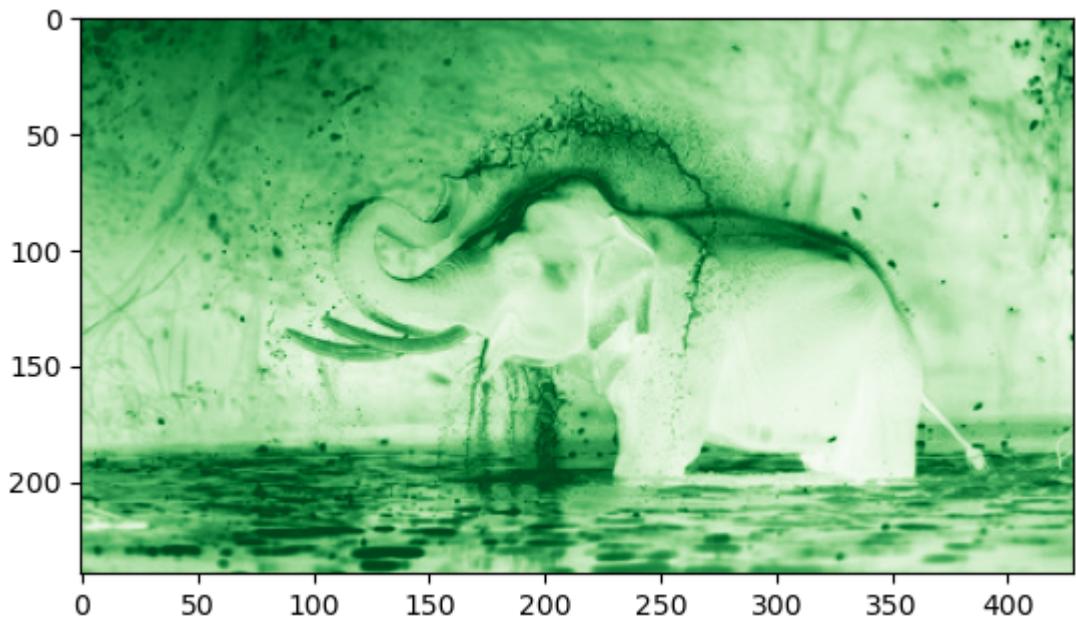
```
In [306... plt.imshow(ele_red[:, :, 0], cmap='Blues')
```

```
Out[306... <matplotlib.image.AxesImage at 0x19a0b207140>
```



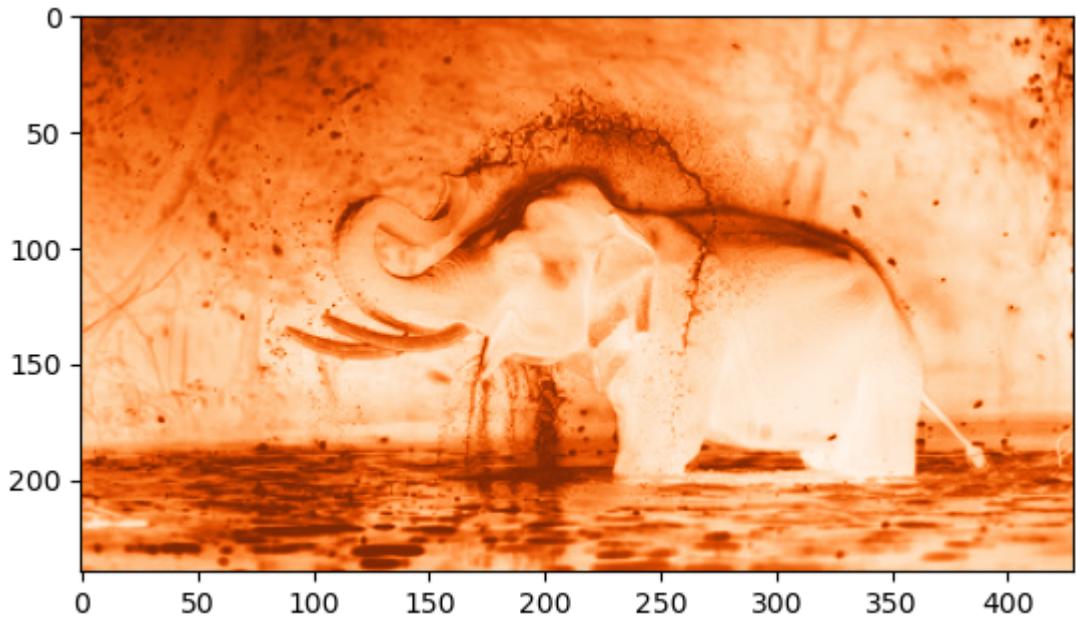
```
In [308... plt.imshow(ele_red[:, :, 0], cmap='Greens')
```

```
Out[308... <matplotlib.image.AxesImage at 0x19a0b2648f0>
```



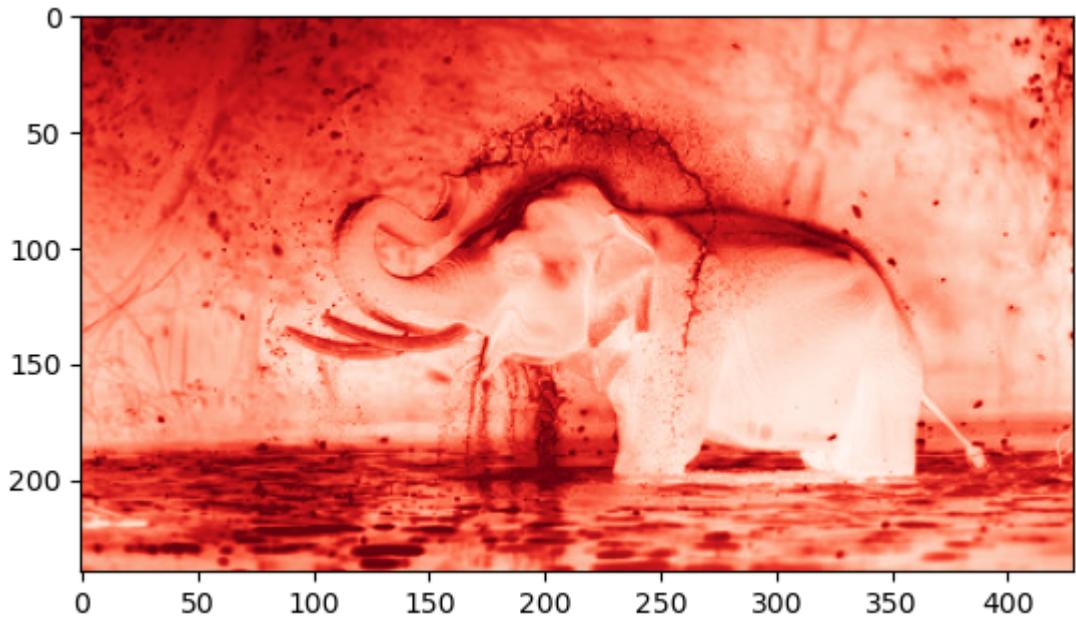
```
In [310... plt.imshow(ele_red[:, :, 0], cmap='Oranges')
```

```
Out[310... <matplotlib.image.AxesImage at 0x19a0aede4e0>
```



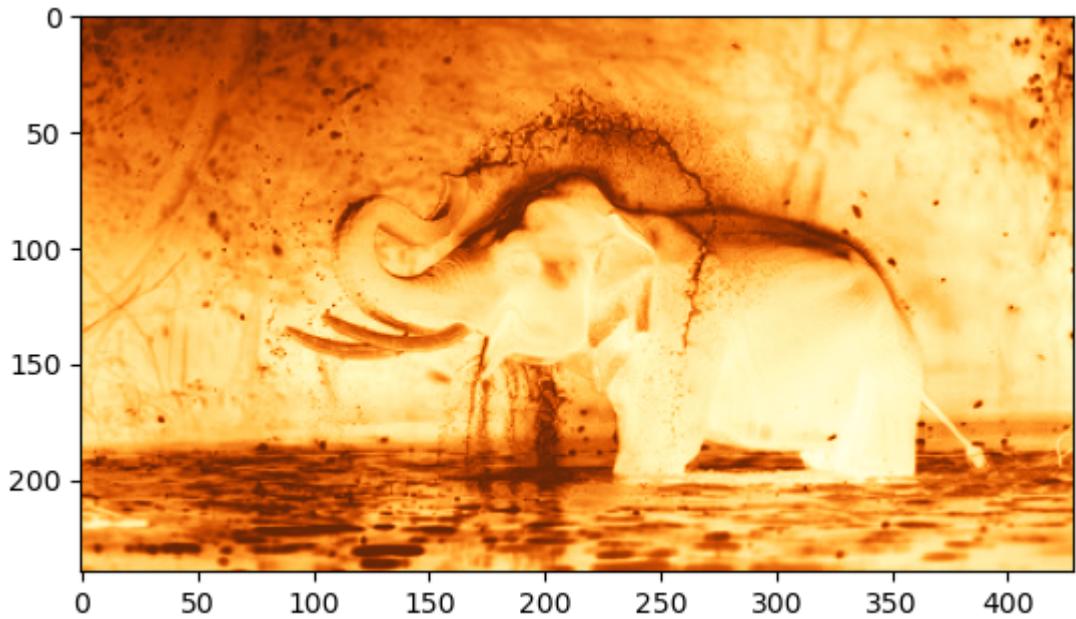
```
In [311... plt.imshow(ele_red[:, :, 0], cmap='Reds')
```

```
Out[311... <matplotlib.image.AxesImage at 0x19a0b2f42f0>
```



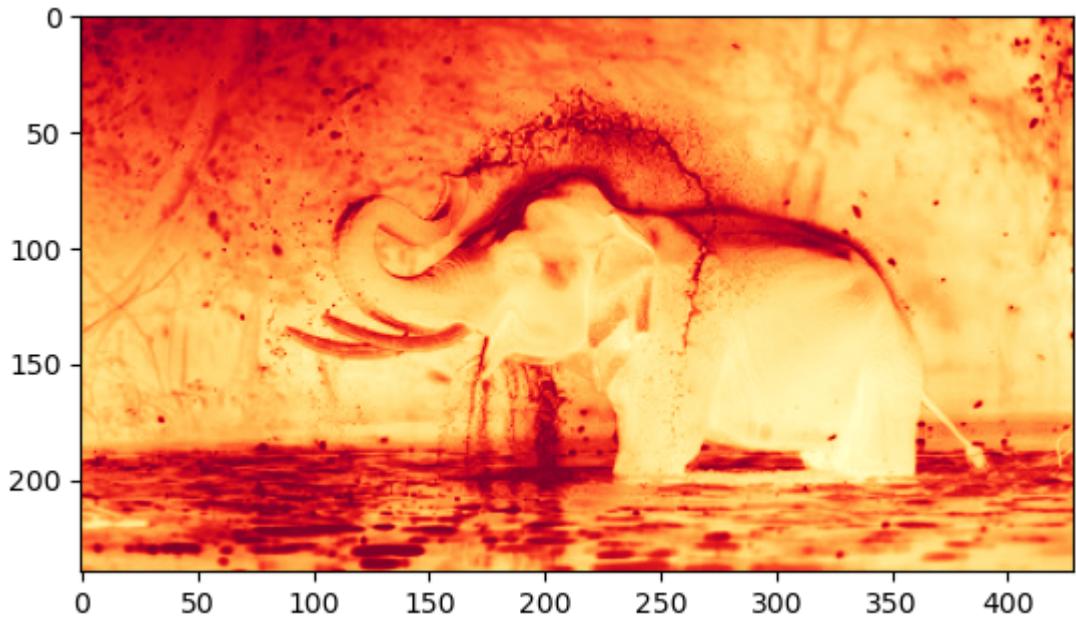
```
In [313... plt.imshow(ele_red[:, :, 0], cmap='YlOrBr')
```

```
Out[313... <matplotlib.image.AxesImage at 0x19a0b3b7140>
```



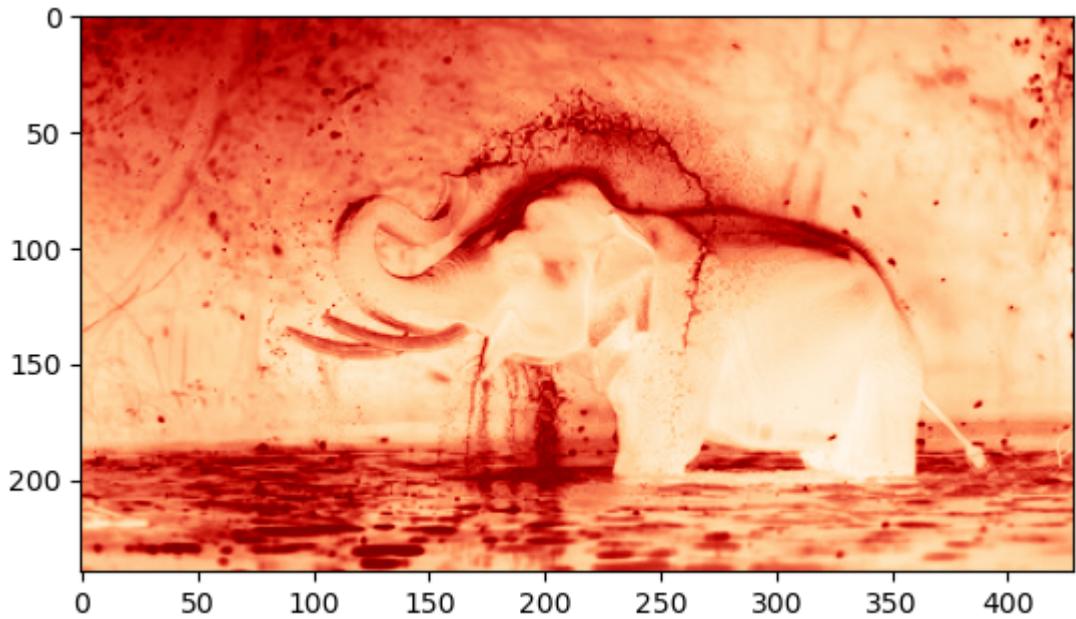
```
In [315... plt.imshow(ele_red[:, :, 0], cmap='YlOrRd')
```

```
Out[315... <matplotlib.image.AxesImage at 0x19a09c12cc0>
```



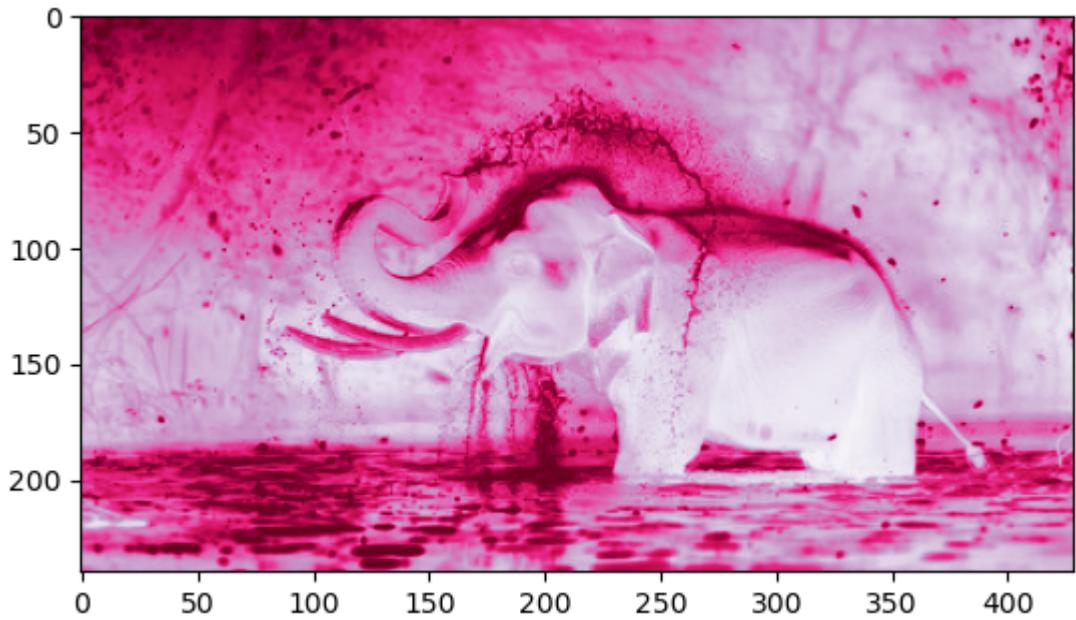
```
In [316... plt.imshow(ele_red[:, :, 0], cmap='OrRd')
```

```
Out[316... <matplotlib.image.AxesImage at 0x19a0b163ad0>
```



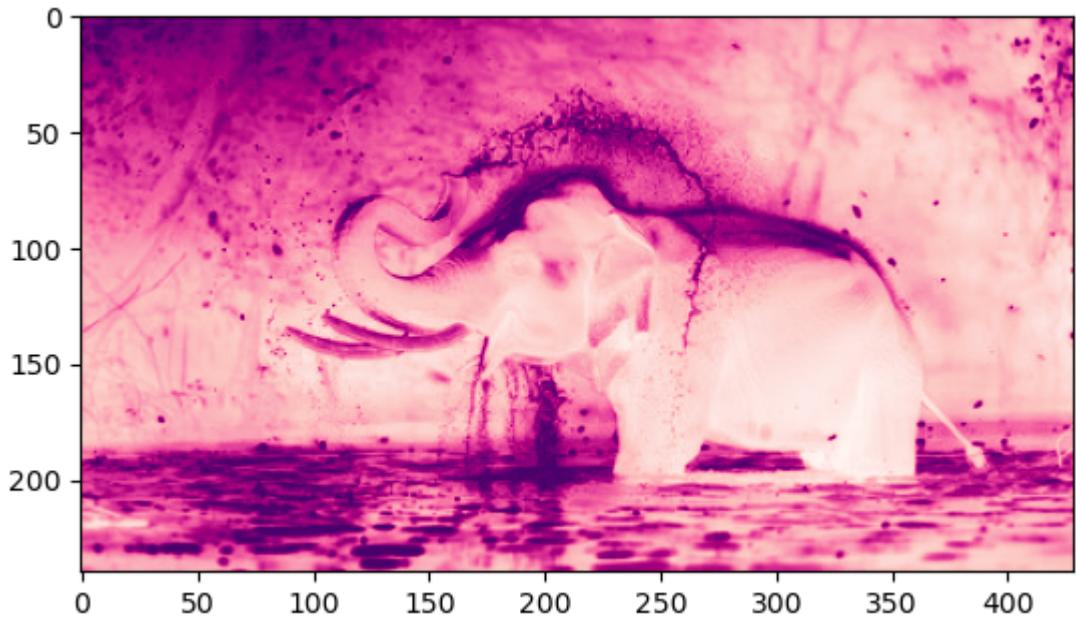
```
In [318]: plt.imshow(ele_red[:, :, 0], cmap='PuRd')
```

```
Out[318]: <matplotlib.image.AxesImage at 0x19a0b1bb650>
```



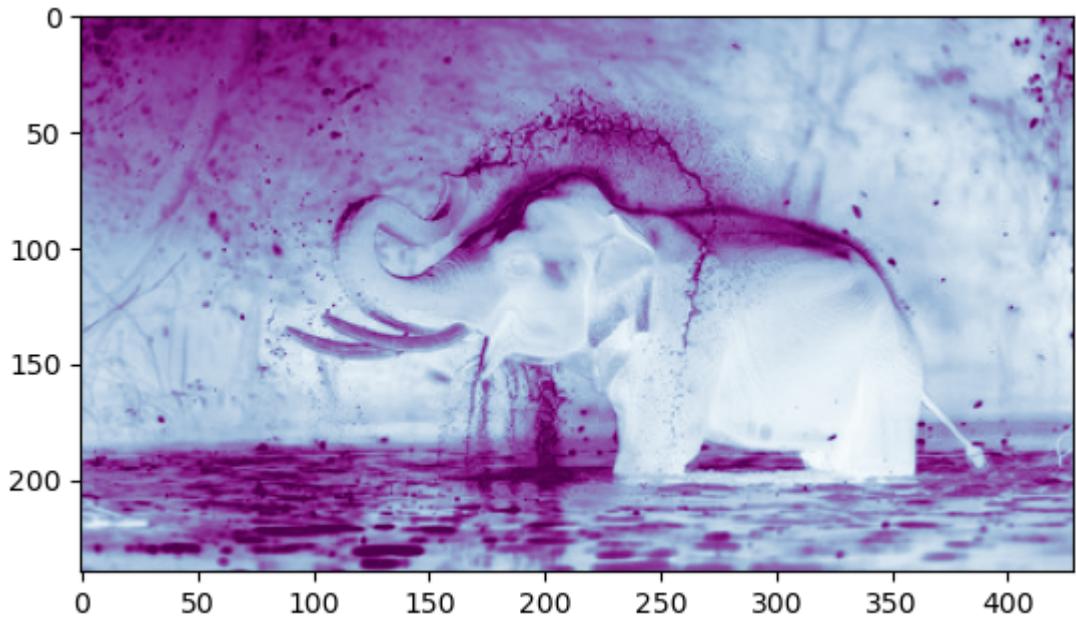
```
In [320]: plt.imshow(ele_red[:, :, 0], cmap='RdPu')
```

```
Out[320]: <matplotlib.image.AxesImage at 0x19a0c53a5d0>
```



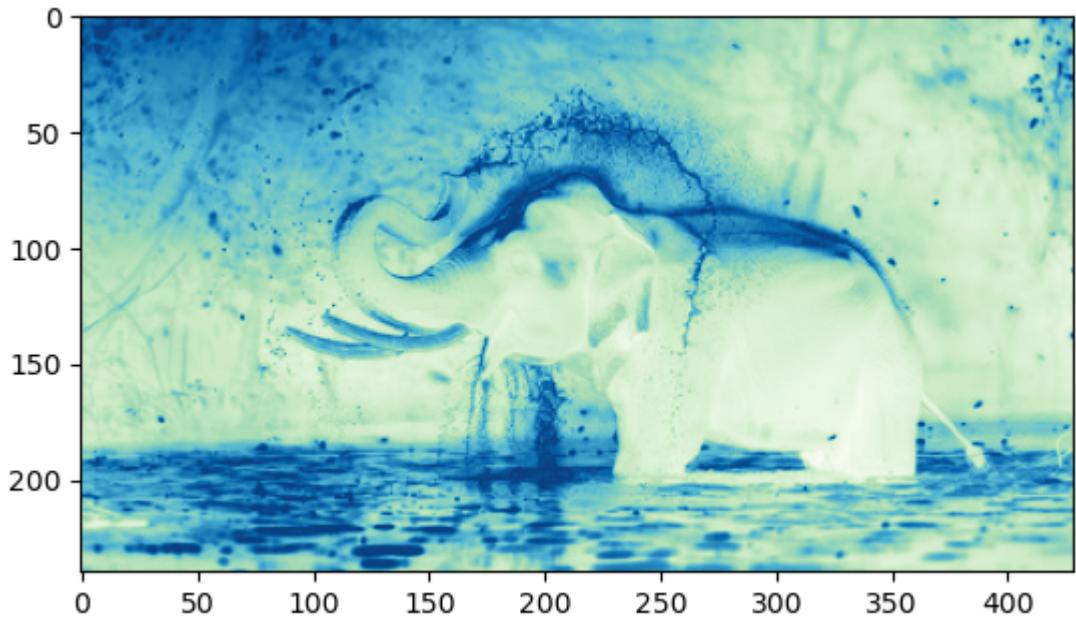
```
In [321... plt.imshow(ele_red[:, :, 0], cmap='BuPu')
```

```
Out[321... <matplotlib.image.AxesImage at 0x19a0c5f5700>
```



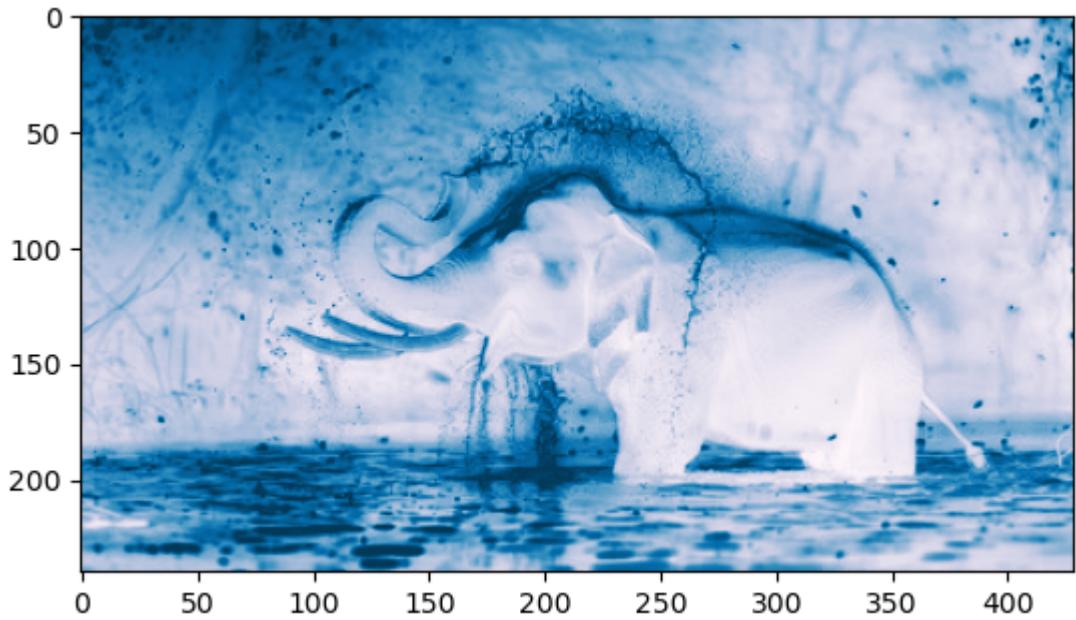
```
In [323... plt.imshow(ele_red[:, :, 0], cmap='GnBu')
```

```
Out[323... <matplotlib.image.AxesImage at 0x19a0c61f7a0>
```



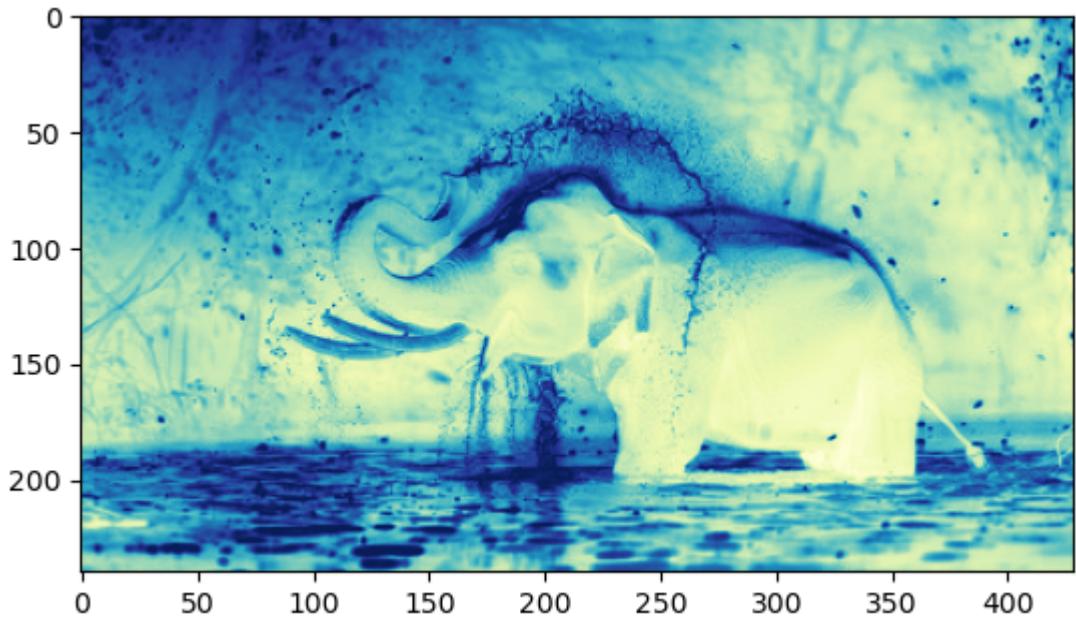
```
In [325...]: plt.imshow(ele_red[:, :, 0], cmap='PuBu')
```

```
Out[325...]: <matplotlib.image.AxesImage at 0x19a0c61df70>
```



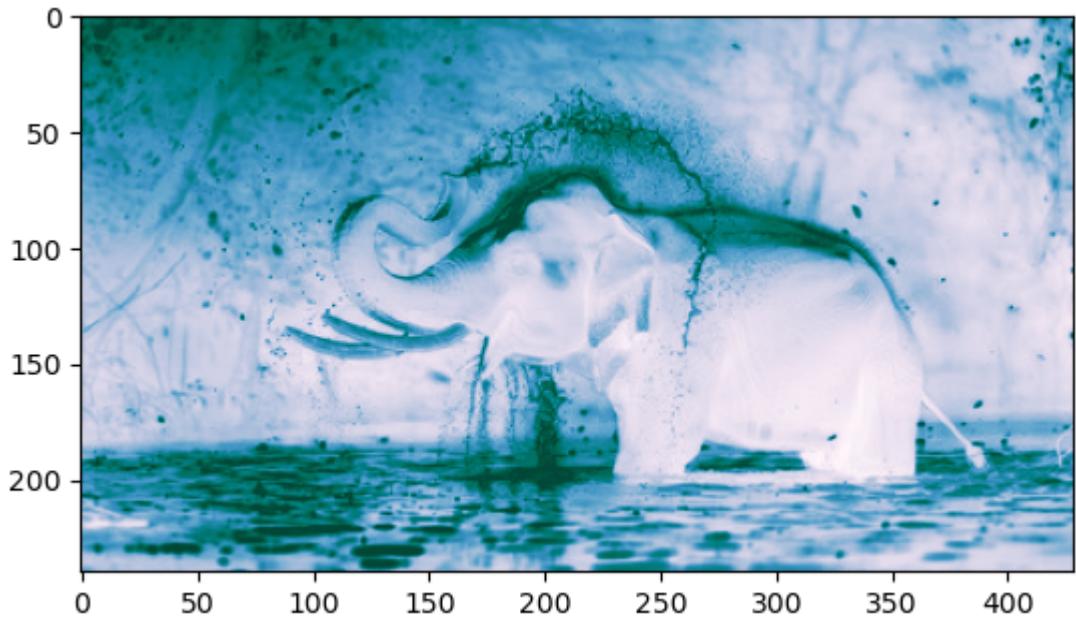
```
In [326...]: plt.imshow(ele_red[:, :, 0], cmap='YlGnBu')
```

```
Out[326...]: <matplotlib.image.AxesImage at 0x19a0b03b200>
```



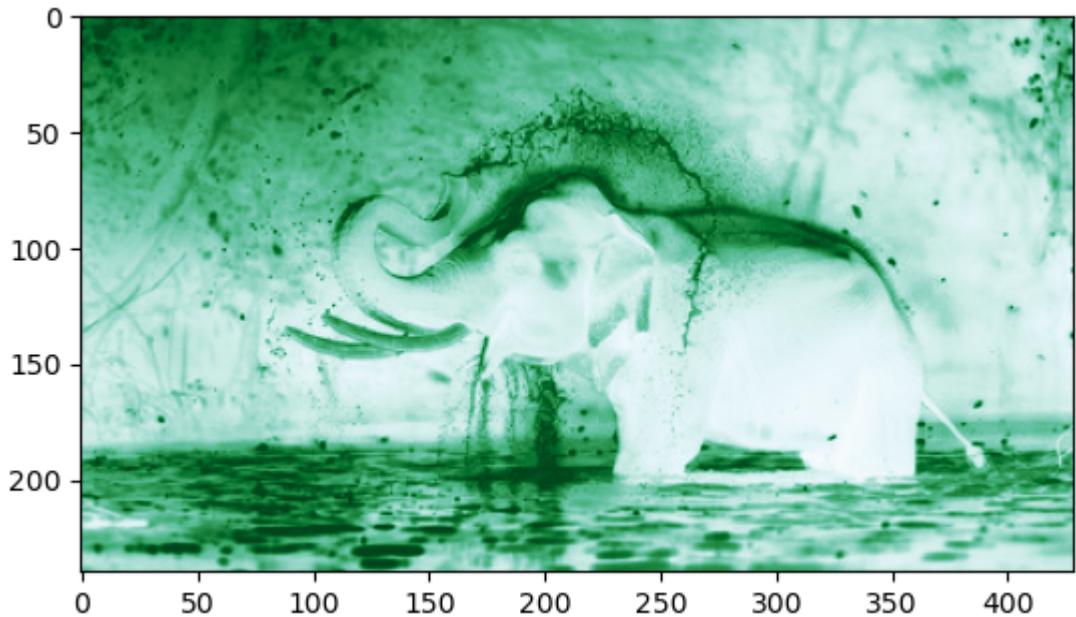
```
In [328]: plt.imshow(ele_red[:, :, 0], cmap='PuBuGn')
```

```
Out[328]: <matplotlib.image.AxesImage at 0x19a0c458140>
```



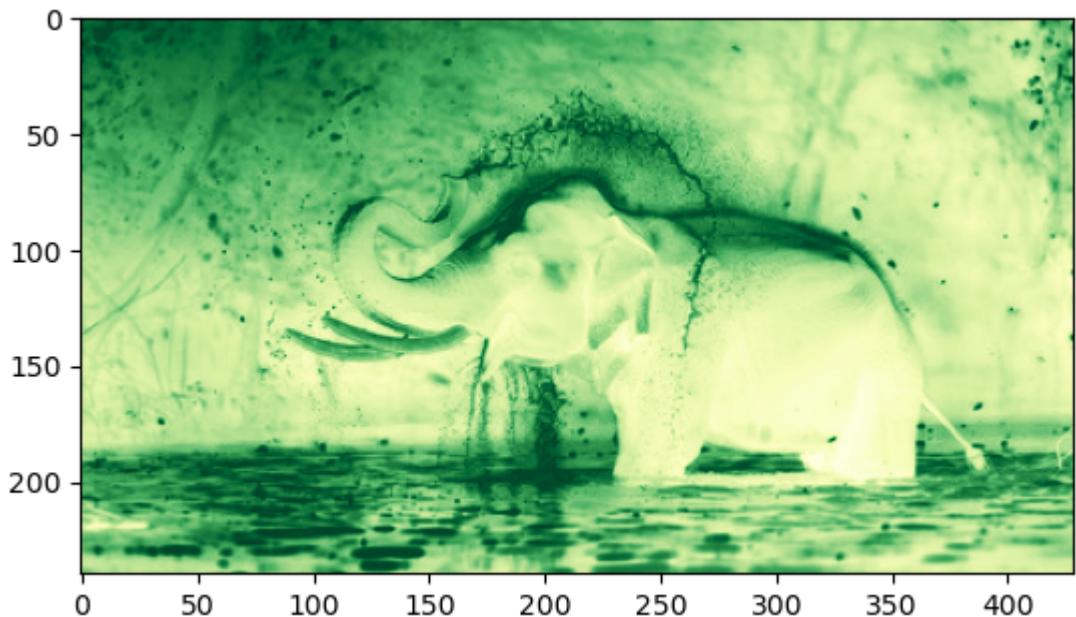
```
In [332]: plt.imshow(ele_red[:, :, 0], cmap='BuGn')
```

```
Out[332]: <matplotlib.image.AxesImage at 0x19a0c45acf0>
```



```
In [335...]: plt.imshow(ele_red[:, :, 0], cmap='YlGn')
```

```
Out[335...]: <matplotlib.image.AxesImage at 0x19a09a2a2d0>
```



```
In [337...]: ele_red[:, :, 0]
```

```
Out[337...]: array([[223, 220, 209, ..., 161, 130, 106],
       [240, 228, 211, ..., 150, 126, 104],
       [246, 232, 214, ..., 139, 113, 111],
       ...,
       [ 90,  91,  91, ...,  66,  66,  66],
       [114, 116, 117, ...,  63,  64,  65],
       [124, 127, 129, ...,  59,  60,  61]], dtype=uint8)
```

```
In [339...]: ele_red[:, :, 1]
```

```
Out[339... array([[196, 195, 185, ..., 116, 89, 68],  
   [211, 201, 186, ..., 107, 87, 70],  
   [215, 201, 186, ..., 100, 78, 80],  
   ...,  
   [ 88,  87,  86, ...,  55,  55,  55],  
   [111, 112, 113, ...,  54,  53,  54],  
   [121, 124, 124, ...,  50,  51,  50]], dtype=uint8)
```

```
In [343... ele_red[:, :, 2]
```

```
Out[343... array([[65, 79, 85, ..., 61, 33, 19],  
   [83, 86, 86, ..., 52, 30, 22],  
   [88, 85, 86, ..., 43, 22, 33],  
   ...,  
   [63, 62, 64, ..., 27, 27, 27],  
   [80, 83, 84, ..., 25, 25, 26],  
   [86, 91, 94, ..., 19, 20, 20]], dtype=uint8)
```

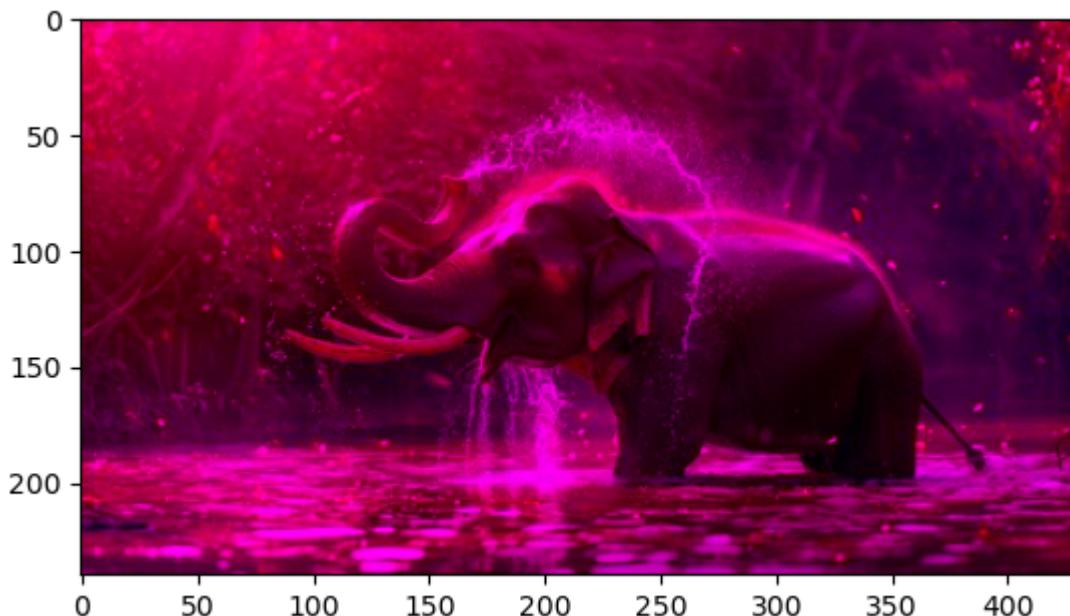
```
In [345... ele_red[:, :, 1] = 0
```

```
In [347... ele_red[:, :, 1]
```

```
Out[347... array([[0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   ...,  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [349... plt.imshow(ele_red)
```

```
Out[349... <matplotlib.image.AxesImage at 0x19a098aaed0>
```



```
In [351... ele_red[:, :, 2]
```

```
Out[351... array([[65, 79, 85, ..., 61, 33, 19],  
   [83, 86, 86, ..., 52, 30, 22],  
   [88, 85, 86, ..., 43, 22, 33],  
   ...,  
   [63, 62, 64, ..., 27, 27, 27],  
   [80, 83, 84, ..., 25, 25, 26],  
   [86, 91, 94, ..., 19, 20, 20]], dtype=uint8)
```

```
In [353... ele_red[:, :, 2] = 0
```

```
In [355... ele_red[:, :, 2]
```

```
Out[355... array([[0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   ...,  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0],  
   [0, 0, 0, ..., 0, 0, 0]], dtype=uint8)
```

```
In [357... plt.imshow(ele_red)
```

```
Out[357... <matplotlib.image.AxesImage at 0x19a0c4285c0>
```



```
In [359... ele_arr
```

```
Out[359... array([[[223, 196, 65],  
   [220, 195, 79],  
   [209, 185, 85],  
   ...,  
   [161, 116, 61],  
   [130, 89, 33],  
   [106, 68, 19]],  
  
   [[240, 211, 83],  
   [228, 201, 86],  
   [211, 186, 86],  
   ...,  
   [150, 107, 52],  
   [126, 87, 30],  
   [104, 70, 22]],  
  
   [[246, 215, 88],  
   [232, 201, 85],  
   [214, 186, 86],  
   ...,  
   [139, 100, 43],  
   [113, 78, 22],  
   [111, 80, 33]],  
  
   ...,  
  
   [[ 90, 88, 63],  
   [ 91, 87, 62],  
   [ 91, 86, 64],  
   ...,  
   [ 66, 55, 27],  
   [ 66, 55, 27],  
   [ 66, 55, 27]],  
  
   [[114, 111, 80],  
   [116, 112, 83],  
   [117, 113, 84],  
   ...,  
   [ 63, 54, 25],  
   [ 64, 53, 25],  
   [ 65, 54, 26]],  
  
   [[124, 121, 86],  
   [127, 124, 91],  
   [129, 124, 94],  
   ...,  
   [ 59, 50, 19],  
   [ 60, 51, 20],  
   [ 61, 50, 20]]], dtype=uint8)
```

```
In [361... ele_red
```

```
Out[361... array([[[223, 0, 0],
   [220, 0, 0],
   [209, 0, 0],
   ...,
   [161, 0, 0],
   [130, 0, 0],
   [106, 0, 0]],

   [[240, 0, 0],
   [228, 0, 0],
   [211, 0, 0],
   ...,
   [150, 0, 0],
   [126, 0, 0],
   [104, 0, 0]],

   [[246, 0, 0],
   [232, 0, 0],
   [214, 0, 0],
   ...,
   [139, 0, 0],
   [113, 0, 0],
   [111, 0, 0]],

   ...,

   [[ 90, 0, 0],
   [ 91, 0, 0],
   [ 91, 0, 0],
   ...,
   [ 66, 0, 0],
   [ 66, 0, 0],
   [ 66, 0, 0]],

   [[114, 0, 0],
   [116, 0, 0],
   [117, 0, 0],
   ...,
   [ 63, 0, 0],
   [ 64, 0, 0],
   [ 65, 0, 0]],

   [[124, 0, 0],
   [127, 0, 0],
   [129, 0, 0],
   ...,
   [ 59, 0, 0],
   [ 60, 0, 0],
   [ 61, 0, 0]]], dtype=uint8)
```

```
In [382... ele_image
```

```
Out[382...]
```



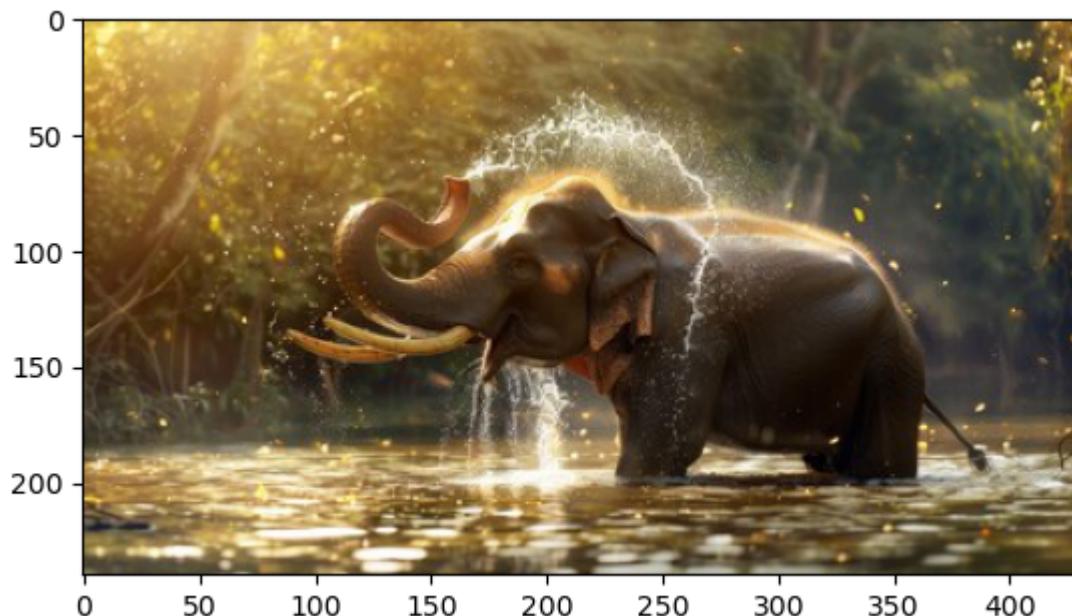
```
In [392...]: arr1 = np.asarray(ele_image)
```

```
In [395...]: type(arr1)
```

```
Out[395...]: numpy.ndarray
```

```
In [397...]: plt.imshow(arr1)
```

```
Out[397...]: <matplotlib.image.AxesImage at 0x19a0c7eb3e0>
```



```
In [401...]: ele_image=arr1.copy()
```

```
In [405...]: ele_image[:, :, 0] = 0
```

```
In [407...]: plt.imshow(ele_image)
```

```
Out[407...]: <matplotlib.image.AxesImage at 0x19a0c7a5550>
```



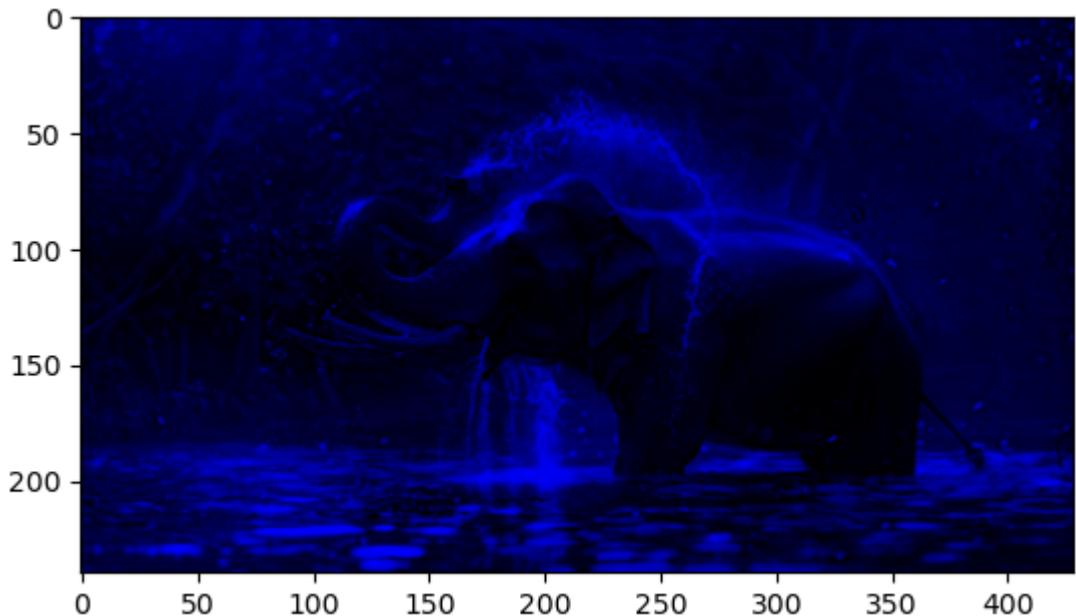
```
In [409...]: ele_image[:, :, 1]
```

```
Out[409...]: array([[196, 195, 185, ..., 116, 89, 68],
       [211, 201, 186, ..., 107, 87, 70],
       [215, 201, 186, ..., 100, 78, 80],
       ...,
       [ 88,  87,  86, ...,  55,  55,  55],
       [111, 112, 113, ...,  54,  53,  54],
       [121, 124, 124, ...,  50,  51,  50]], dtype=uint8)
```

```
In [411...]: ele_image[:, :, 1] = 0
```

```
In [415...]: plt.imshow(ele_image)
```

```
Out[415...]: <matplotlib.image.AxesImage at 0x19a0e281a00>
```



```
In [ ]:
```