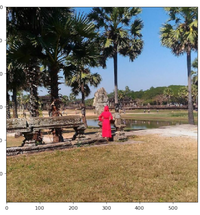
In [2]:
```
import numpy as np
import matplotlib.pyplot as plt
from skimage.io import imshow, imread
from skimage.color import rgb2hsv, hsv2rgb
import cv2
```

In [35]:
```
red_girl = imread('RGirl.png')
plt.figure(num=None, figsize=(8, 6), dpi=80)
imshow(red_girl)
```

Out[35]:
```
<matplotlib.image.AxesImage at 0x7f8698942be0>
```



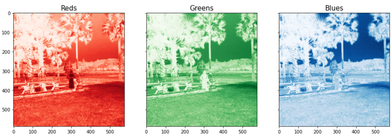
In [37]:
```
red_filtered_girl = (red_girl[:,:,0] > 150)
plt.figure(num=None, figsize=(8, 6), dpi=80)
imshow(red_filtered_girl, cmap = 'gray')
```

Out[37]:
```
<matplotlib.image.AxesImage at 0x7f8698eb15e0>
```

In [32]:
```
red_girl_new = red_girl.copy()
red_girl_new[:, :, 0] = red_girl_new[:, :, 0]*red_filtered_girl
red_girl_new[:, :, 1] = red_girl_new[:, :, 1]*red_filtered_girl
red_girl_new[:, :, 2] = red_girl_new[:, :, 2]*red_filtered_girl
plt.figure(num=None, figsize=(8, 6), dpi=80)
imshow(red_girl_new)
```

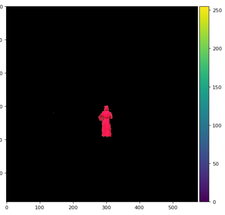
Out[32]:
```
<matplotlib.image.AxesImage at 0x7f8698cfbdc0>
```

In [6]:
```
def rgb_splitter(image):
    rgb_list = ['Reds','Greens','Blues']
    fig, ax = plt.subplots(1, 3, figsize=(15,5), sharey = True)
    for i in range(3):
        ax[i].imshow(image[:,:,i], cmap = rgb_list[i])
        ax[i].set_title(rgb_list[i], fontsize = 15)

rgb_splitter(red_girl)
```

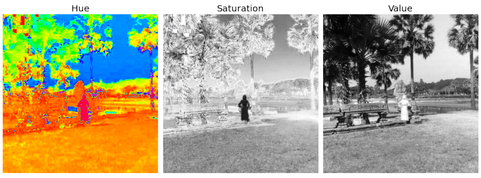


In [38]:
```
red_filtered = (red_girl[:,:,0] > 150) & (red_girl[:,:,1] < 100) & (red_girl[:,:,2] < 110)
plt.figure(num=None, figsize=(8, 6), dpi=80)
red_girl_new = red_girl.copy()
red_girl_new[:, :, 0] = red_girl_new[:, :, 0] * red_filtered
red_girl_new[:, :, 1] = red_girl_new[:, :, 1] * red_filtered
red_girl_new[:, :, 2] = red_girl_new[:, :, 2] * red_filtered
imshow(red_girl_new)
```

Out[38]:
```
<matplotlib.image.AxesImage at 0x7f8699ea5210>
```

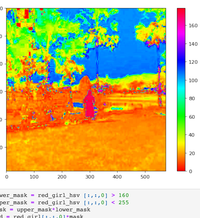


In [8]:
```
def display_as_hsv(image):
    img = cv2.imread(image)
    img_hsv = cv2.cvtColor(img, cv2.COLOR_BGR2HSV)

    hsv_list = ['Hue','Saturation','Value']
    fig, ax = plt.subplots(1, 3, figsize=(15,7), sharey = True)

    ax[0].imshow(img_hsv[:,:,0], cmap = 'hsv')
    ax[0].set_title(hsv_list[0], fontsize = 20)
    ax[0].axis('off')

    ax[1].imshow(img_hsv[:,:,1], cmap = 'Greys')
    ax[1].set_title(hsv_list[1], fontsize = 20)
    ax[1].axis('off')
    ax[2].imshow(img_hsv[:,:,2], cmap = 'gray')
    ax[2].set_title(hsv_list[2], fontsize = 20)
    ax[2].axis('off')

    fig.tight_layout()

display_as_hsv('RGirl.png')
```



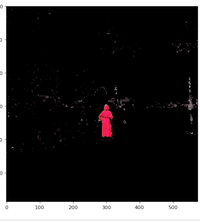
In [39]:
```
img = cv2.imread('RGirl.png')
red_girl_hsv = cv2.cvtColor(img, cv2.COLOR_BGR2HSV)
plt.figure(num=None, figsize=(8, 6), dpi=80)
plt.imshow(red_girl_hsv[:,:,0], cmap='hsv')
plt.colorbar()
```

Out[39]:
```
<matplotlib.colorbar.Colorbar at 0x7f8699899d00>
```



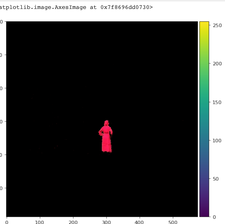
In [40]:
```
lower_mask = red_girl_hsv [:,:,0] > 160
upper_mask = red_girl_hsv [:,:,0] < 255
mask = upper_mask*lower_mask
red = red_girl[:,:,0]*mask
green = red_girl[:,:,1]*mask
blue = red_girl[:,:,2]*mask
red_girl_masked = np.dstack((red,green,blue))
plt.figure(num=None, figsize=(8, 6), dpi=80)
imshow(red_girl_masked)
```

Out[40]:
```
<matplotlib.image.AxesImage at 0x7f8696e06130>
```



In [41]:
```
lower_mask = red_girl_hsv [:,:,0] > 160
upper_mask = red_girl_hsv [:,:,0] < 255
saturation = red_girl_hsv [:,:,1] > 150
mask = upper_mask*lower_mask*saturation
red = red_girl[:,:,0]*mask
green = red_girl[:,:,1]*mask
blue = red_girl[:,:,2]*mask
red_girl_masked = np.dstack((red,green,blue))
plt.figure(num=None, figsize=(8, 6), dpi=80)
imshow(red_girl_masked)
```

Out[41]:
```
<matplotlib.image.AxesImage at 0x7f8696dd073d>
```



In [ ]:
```
```