

Poly_Profiles

September 23, 2015

1 !!WILL NOT WORK WITHOUT VOXEL DATA!!

```
In [1]: import matplotlib.pyplot as plt
        from scipy import io
        import seaborn as sns
        import numpy as np
        %matplotlib inline
```

```
In [2]: #
        # Load Polychromatic reconstructions from scratch
        #

prj_15_1_D0_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_1.5_1_D0_S0.mat')\
['img']['vox'][0][0]
prj_15_1_D0_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_1.5_1_D0_S0.mat')\
['img']['vox'][0][0]

prj_15_1_D1_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_1.5_1_D1_S0.mat')\
['img']['vox'][0][0]
prj_15_1_D1_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_1.5_1_D1_S0.mat')\
['img']['vox'][0][0]

prj_15_1_D0_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_1.5_1_D0_S1.mat')\
['img']['vox'][0][0]
prj_15_1_D0_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_1.5_1_D0_S1.mat')\
['img']['vox'][0][0]

prj_15_1_D1_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_1.5_1_D1_S1.mat')\
['img']['vox'][0][0]
prj_15_1_D1_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_1.5_1_D1_S1.mat')\
['img']['vox'][0][0]

prj_26111_1_D0_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_2.6111_1_D0_S0.mat')\
['img']['vox'][0][0]
prj_26111_1_D0_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_2.6111_1_D0_S0.mat')\
['img']['vox'][0][0]

prj_26111_1_D1_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_2.6111_1_D1_S0.mat')\
['img']['vox'][0][0]
prj_26111_1_D1_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_2.6111_1_D1_S0.mat')\
['img']['vox'][0][0]
```

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prj_26111_1_D0_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_2.6111_1_D0_S1.mat')\
['img']['vox'][0][0]
prj_26111_1_D0_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_2.6111_1_D0_S1.mat')\
['img']['vox'][0][0]

prj_26111_1_D1_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_2.6111_1_D1_S1.mat')\
['img']['vox'][0][0]
prj_26111_1_D1_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_2.6111_1_D1_S1.mat')\
['img']['vox'][0][0]

prj_4_1_D0_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_4_1_D0_S0.mat')\
['img']['vox'][0][0]
prj_4_1_D0_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_4_1_D0_S0.mat')\
['img']['vox'][0][0]

prj_4_1_D1_S0_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_4_1_D1_S0.mat')\
['img']['vox'][0][0]
prj_4_1_D1_S0_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_4_1_D1_S0.mat')\
['img']['vox'][0][0]

prj_4_1_D0_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_4_1_D0_S1.mat')\
['img']['vox'][0][0]
prj_4_1_D0_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_4_1_D0_S1.mat')\
['img']['vox'][0][0]

prj_4_1_D1_S1_al = io.loadmat('/scratch/jdg1g14/poly_results/prj_4_1_D1_S1.mat')\
['img']['vox'][0][0]
prj_4_1_D1_S1_ag = io.loadmat('/scratch/jdg1g14/poly_results_ag/prj_4_1_D1_S1.mat')\
['img']['vox'][0][0]

```

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In [3]: #
        # Al plots
        #

fig, (ax1,ax2,ax3) = plt.subplots(nrows=1,ncols=3,figsize=(15,7),sharex='col',sharey='row')
xs = np.linspace(-35,35,301)
fig.suptitle("Al - Edge Profile",fontsize=18)

ax1.plot(xs,prj_4_1_D0_S0_al[150,150,:],label = 'SOD0')
ax1.plot(xs,prj_4_1_D1_S0_al[150,150,:],label = 'SOD1')
ax1.plot(xs,prj_4_1_D0_S1_al[150,150,:],label = 'S1D0')
ax1.plot(xs,prj_4_1_D1_S1_al[150,150,:],label = 'S1D1')
ax1.set_ylabel('Attenuation',fontsize=16)
ax1.set_title('Magnification = 4.0',fontsize=16)
ax1.legend(loc=0,fontsize=16)

ax2.plot(xs,prj_26111_1_D0_S0_al[150,150,:],label = 'SOD0')
ax2.plot(xs,prj_26111_1_D1_S0_al[150,150,:],label = 'SOD1')
ax2.plot(xs,prj_26111_1_D0_S1_al[150,150,:],label = 'S1D0')
ax2.plot(xs,prj_26111_1_D1_S1_al[150,150,:],label = 'S1D1')
ax2.set_title('Magnification = 2.6111',fontsize=16)

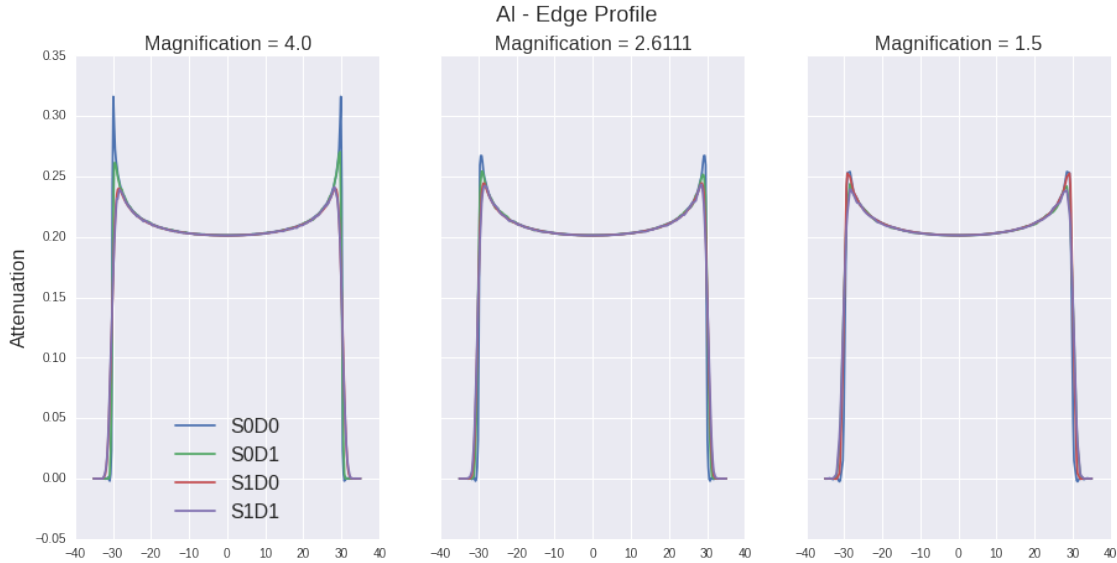
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ax3.plot(xs,prj_15_1_D0_S0_al[150,150,:],label = 'SOD0')
ax3.plot(xs,prj_15_1_D1_S0_al[150,150,:],label = 'SOD1')
ax3.plot(xs,prj_15_1_D0_S1_al[150,150,:],label = 'S1D0')
ax3.plot(xs,prj_15_1_D1_S1_al[150,150,:],label = 'S1D1')
ax3.set_title('Magnification = 1.5',fontsize=16)

```

Out[3]: <matplotlib.text.Text at 0x7f5938edb450>



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In [4]: #
        # Ag plots
        #

fig, (ax1,ax2,ax3) = plt.subplots(nrows=1,ncols=3,figsize=(15,7),sharex='col',sharey='row')
xs = np.linspace(-35,35,301)
fig.suptitle("Ag - Edge Profile",fontsize=18)

ax1.plot(xs,prj_4_1_D0_S0_ag[150,150,:],label = 'SOD0')
ax1.plot(xs,prj_4_1_D1_S0_ag[150,150,:],label = 'SOD1')
ax1.plot(xs,prj_4_1_D0_S1_ag[150,150,:],label = 'S1D0')
ax1.plot(xs,prj_4_1_D1_S1_ag[150,150,:],label = 'S1D1')
ax1.set_ylabel('Attenuation',fontsize=16)
ax1.set_title('Magnification = 4.0',fontsize=16)
ax1.legend(loc=0,fontsize=16)

ax2.plot(xs,prj_26111_1_D0_S0_ag[150,150,:],label = 'SOD0')
ax2.plot(xs,prj_26111_1_D1_S0_ag[150,150,:],label = 'SOD1')
ax2.plot(xs,prj_26111_1_D0_S1_ag[150,150,:],label = 'S1D0')
ax2.plot(xs,prj_26111_1_D1_S1_ag[150,150,:],label = 'S1D1')
ax2.set_title('Magnification = 2.6111',fontsize=16)

```

```

ax3.plot(xs,prj_15_1_D0_S0_ag[150,150,:],label = 'SOD0')
ax3.plot(xs,prj_15_1_D1_S0_ag[150,150,:],label = 'SOD0')
ax3.plot(xs,prj_15_1_D0_S1_ag[150,150,:],label = 'SOD0')
ax3.plot(xs,prj_15_1_D1_S1_ag[150,150,:],label = 'SOD0')
ax3.set_title('Magnification = 1.5',fontsize=16)

```

Out[4]: <matplotlib.text.Text at 0x7f5938d9d690>

