

Report 05/24/2020

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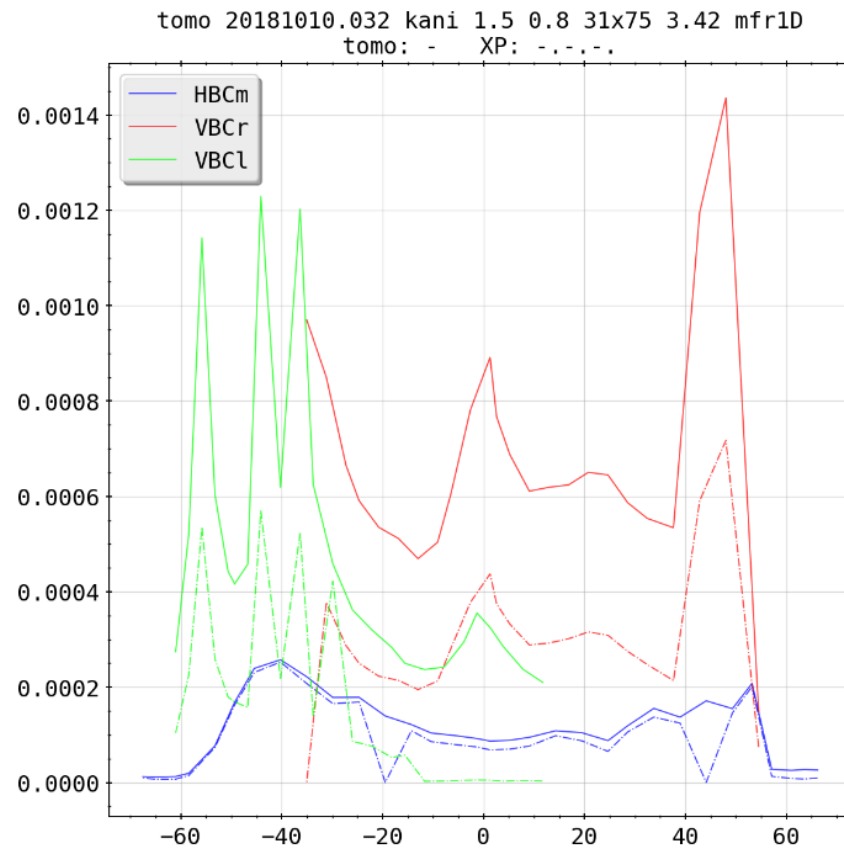
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Improvement on Reconstruction and Chordal Profiles

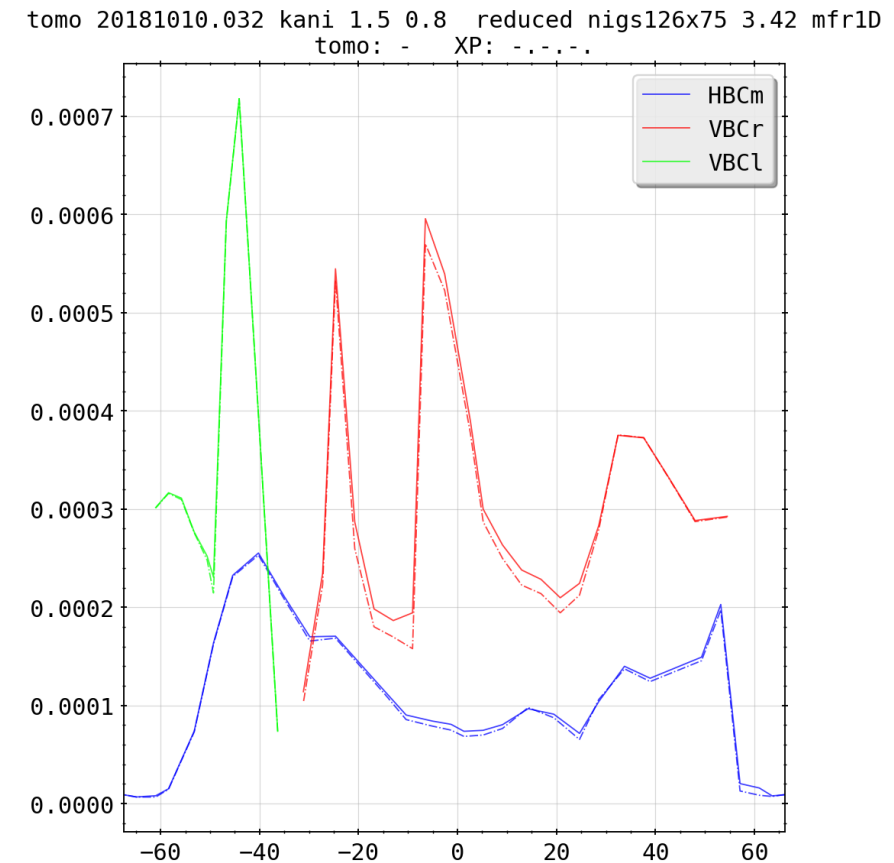
- forward and backward calculation now using the emissivity matrices themselves, instead of channel geometries individually, hence calculating directly to and from the tomogram/phantom
- comparing to input chordal profiles rather than archived ones
- also found error in channel selection and mapping that cause restrictions to zero where no data has been provided or excluded
- deleted broken and unusable channels from script

```
47 def forward_integral(  
48     channels={'none': None},  
49     data=np.zeros((33 * 51)),  
50     emissivity=np.zeros((32, 33 * 51)),  
51     reduced=True,  
52     debug=False):  
53     chord = np.zeros((128))  
54     for n, cam in enumerate(['HBCm', 'VBCl', 'VBCr']):  
55         if reduced:  
56             nCh = channels['reduced']['eChannels'][cam]  
57         else:  
58             nCh = channels['full']['eChannels'][cam]  
59         tm2D = emissivity[n]  
60         forward = tm2D.dot(data)  You, 34 minutes ago • Uncommitted changes  
61         if debug:  
62             print(np.shape(forward), np.shape(nCh))  
63     for c, ch in enumerate(nCh):  
64         if debug:  
65             print('2', cam, c, ch)  
66         chord[ch] = forward[c]  
67     return (chord)
```

Improvement on Reconstruction and Chordal Profiles

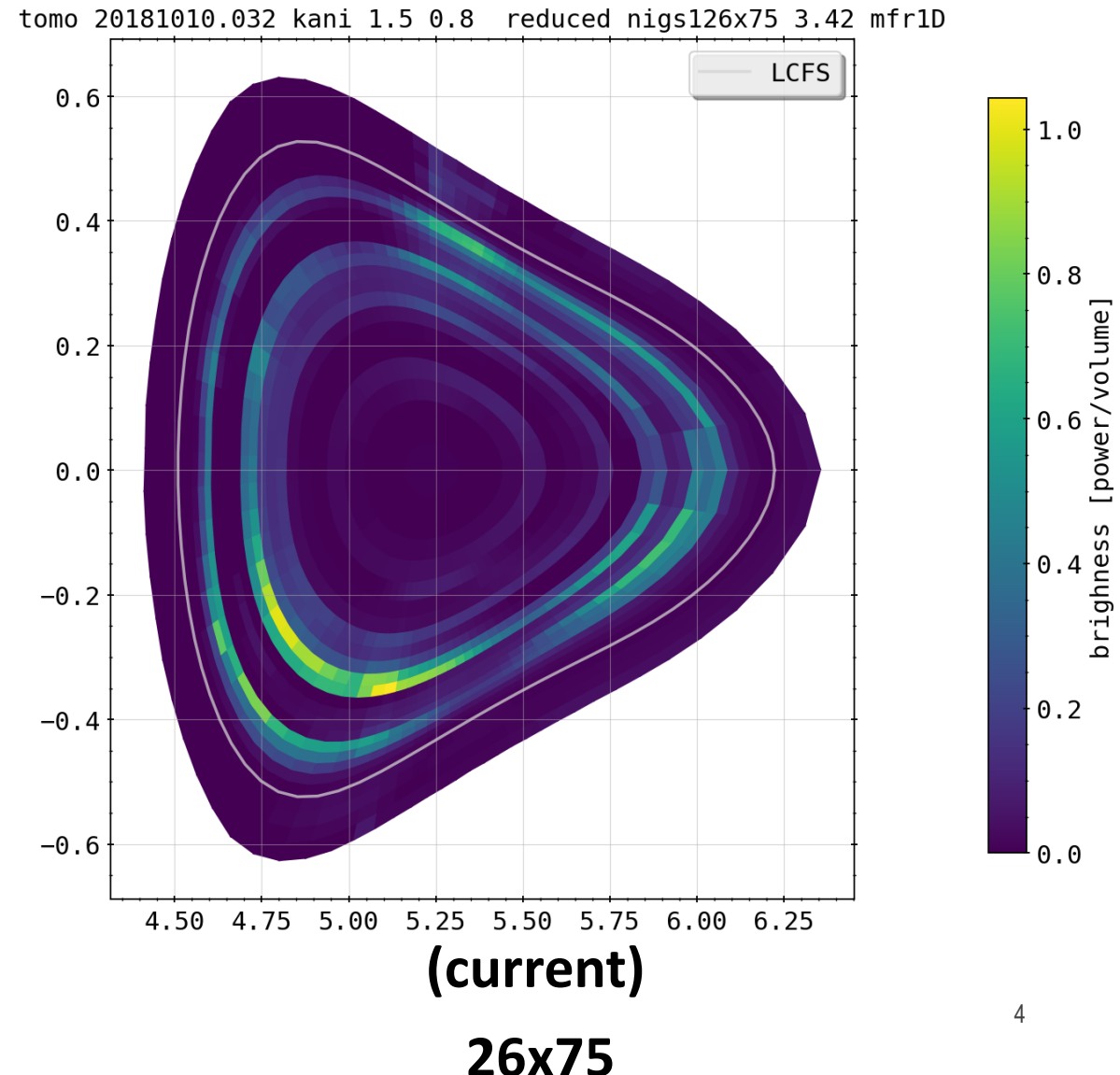
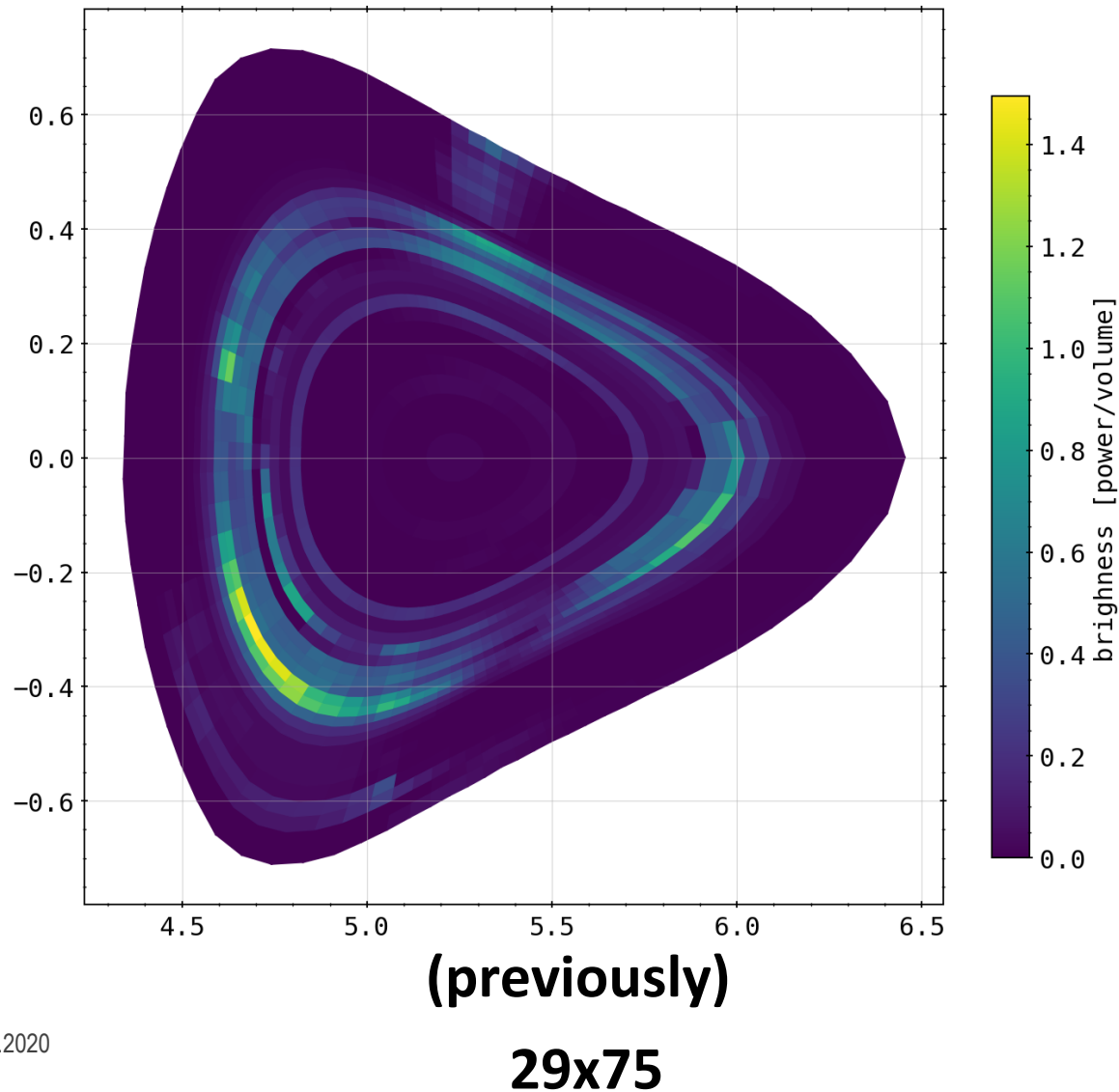


(previously)



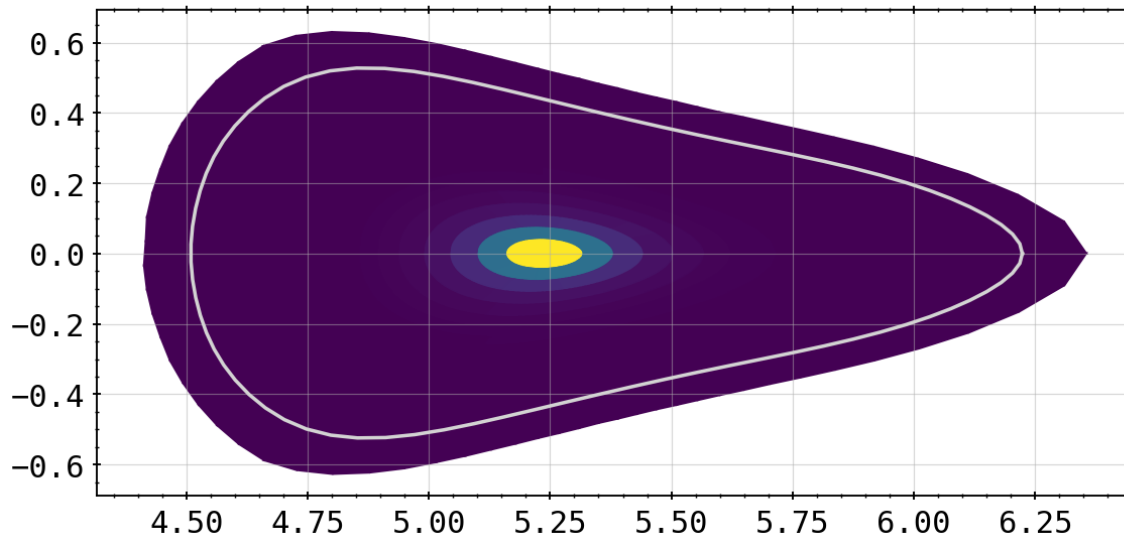
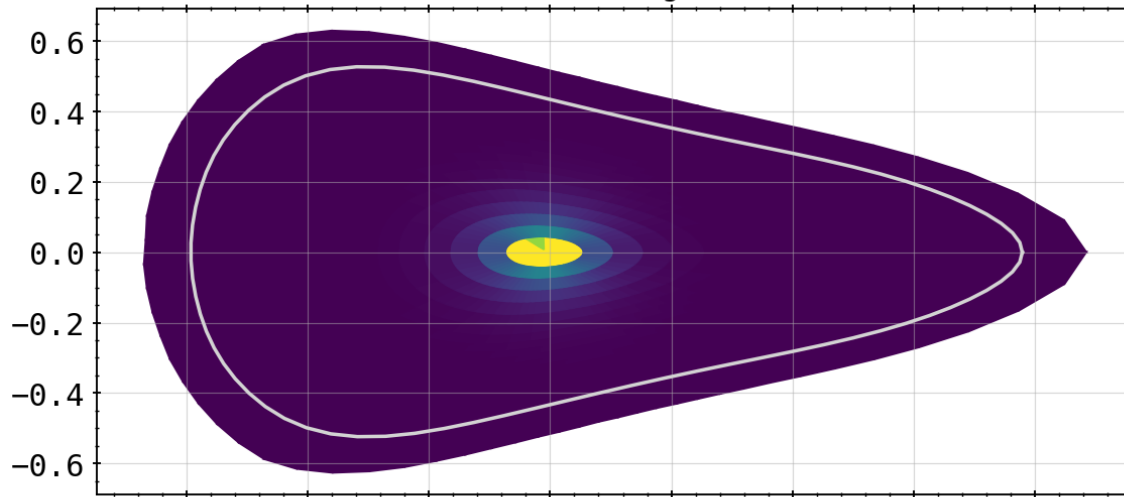
(current)

Improvement on Reconstruction and Chordal Profiles

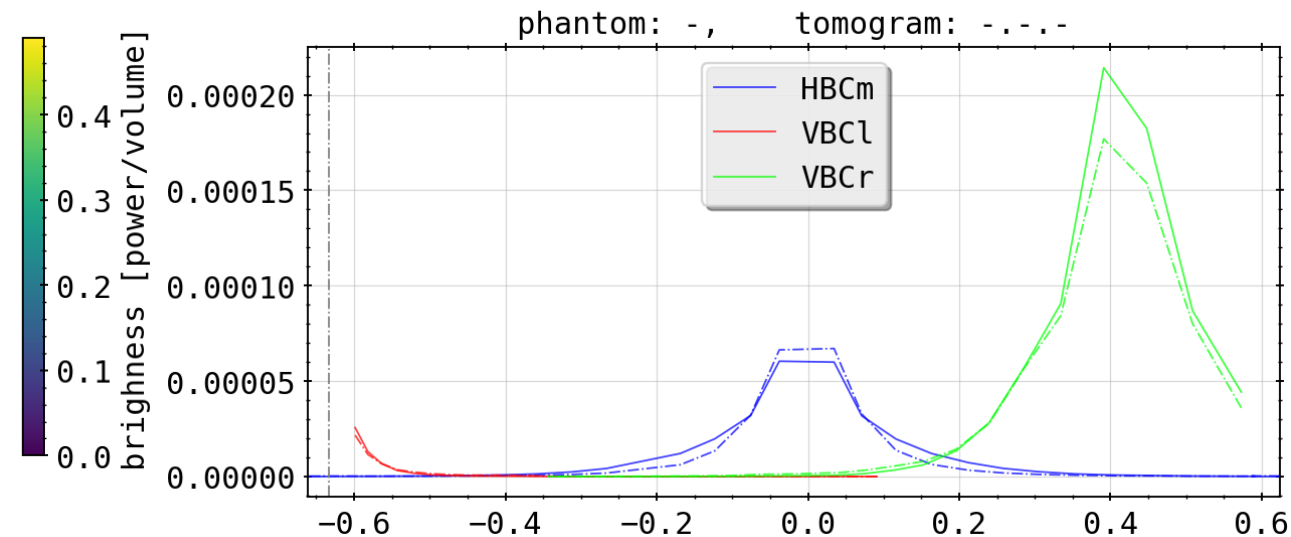
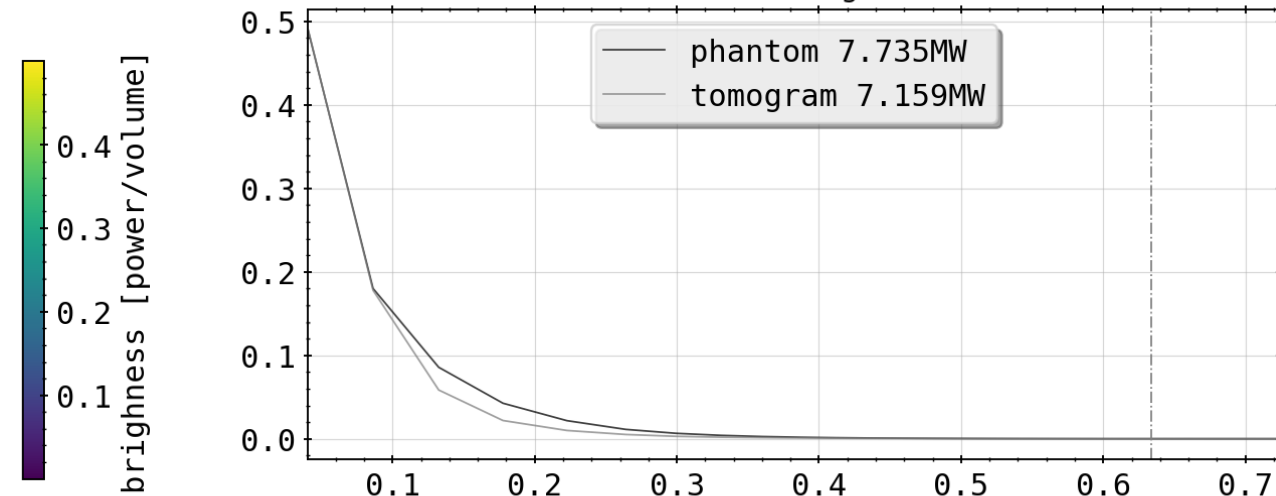


New Phantom Tests: Hot-Spot

magax dist R0.0 sig0.2 26x75 mx
0.5 kani1.5 0.8 nigs1 times0.11



magax dist R0.0 sig0.2 26x75 mx
0.5 kani1.5 0.8 nigs1 times0.11



- **personal routines and procedures specifically for calculation in**
https://git.ipp-hgw.mpg.de/pih/QSB_Bolometry/-/tree/master/libinversion/libcalc
- **private and/or locked git in**
https://git.ipp-hgw.mpg.de/pih/bolometer_mfr
containing the MFR routines of D.Zhang, H.Thomsen

- **now reading and writing the radial profile of anisotropy factors, investigation to be done**
- **first tests of X^2 for 2D profile done, needs better math (divergent if one profile zero in cell, normalization?); implementing D.Zhang's method?**
- **still need to look at actual MFR routine for k_{ani} exceptions and (if) possible cartesian test**