

## Performance of the LOTAAS v.1 pipeline on cartesius

### Time taken by the individual pipeline components per beam (24-core node)

fits2fil: 6min  
 rfifind: 15min  
 mpiprepsubband (253 trials): 3min  
 single pulse search: 1min  
 realfft: 10sec  
 rednoise: 10sec  
 accelsearch (-zmax=0 ; -numharm=16): 1min20sec  
 accelsearch (-zmax=50 ; -numharm=16): 12min  
 accelsearch (-zmax=50 ; -numharm=8): 5min  
 accelsearch (-zmax=50 ; -numharm=8): 26min  
 plots: 20sec  
 python sifting and folding: 21min  
 pfd scrunching: 5sec  
 data copying: a few secs  
 candidate scoring: a few secs

### Total time spent for the first large set of DM trials (0-4000)

mpiprepsubband: 40min  
 sp: 16min  
 realfft: 3.5min  
 rednoise: 3.5min  
 accelsearch (zmax=0;numharm=16): 21min  
 accelsearch (zmax=50;numharm=16): 192min  
 accelsearch (zmax=50;numharm=5): 80min  
 accelsearch (zmax=200;numharm=5): 416min

### Total time spent for the second large set of DM trials (4000-10000)

mpiprepsubband: 24min  
 sp: 8min  
 realfft: 2min  
 rednoise: 2min  
 accelsearch (zmax=0;numharm=16): 11min  
 accelsearch (zmax=50;numharm=16): 96min  
 accelsearch (zmax=50;numharm=5): 40min  
 accelsearch (zmax=200;numharm=5): 208

| % time alloc.           | zmax=0;numharm=16 | zmax=50;numharm=16 | zmax=50;numharm=8 | zmax=200;numharm=8 |
|-------------------------|-------------------|--------------------|-------------------|--------------------|
| <b>fil conversion</b>   | <b>3</b>          | <b>1</b>           | <b>2%</b>         |                    |
| <b>rfifind</b>          | <b>9</b>          | <b>3</b>           | <b>6</b>          |                    |
| <b>dedispersion</b>     | <b>37</b>         | <b>16</b>          | <b>25</b>         |                    |
| <b>sp search</b>        | <b>14</b>         | <b>5</b>           | <b>9</b>          |                    |
| <b>realfft</b>          | <b>3</b>          | <b>1</b>           | <b>2</b>          |                    |
| <b>rednoise</b>         | <b>3</b>          | <b>1</b>           | <b>2</b>          |                    |
| <b>accelsearch</b>      | <b>18</b>         | <b>67</b>          | <b>46</b>         |                    |
| <b>folding</b>          | <b>12</b>         | <b>5</b>           | <b>8</b>          |                    |
| <b>data copying/etc</b> | <b>1</b>          | <b>1</b>           | <b>1</b>          |                    |

Total processing time per beam (zmax=0;numharm=16): ~3hours

Total processing time per beam (zmax=50;numharm=16): ~7hours

## Performance of the LOTAAS v.1 GPU pipeline on cartesius

mpiprepsubband (253 trials): 38sec

## Data transferring (CEP\$/LTA)

32-bit to 8-bit downsampling on CEP2 (per observation): 6-8 hours Transferring from CEP2 to LTA (per observation): 2-3 hours Observation downloading on cartesius (1-core): ~8hours

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