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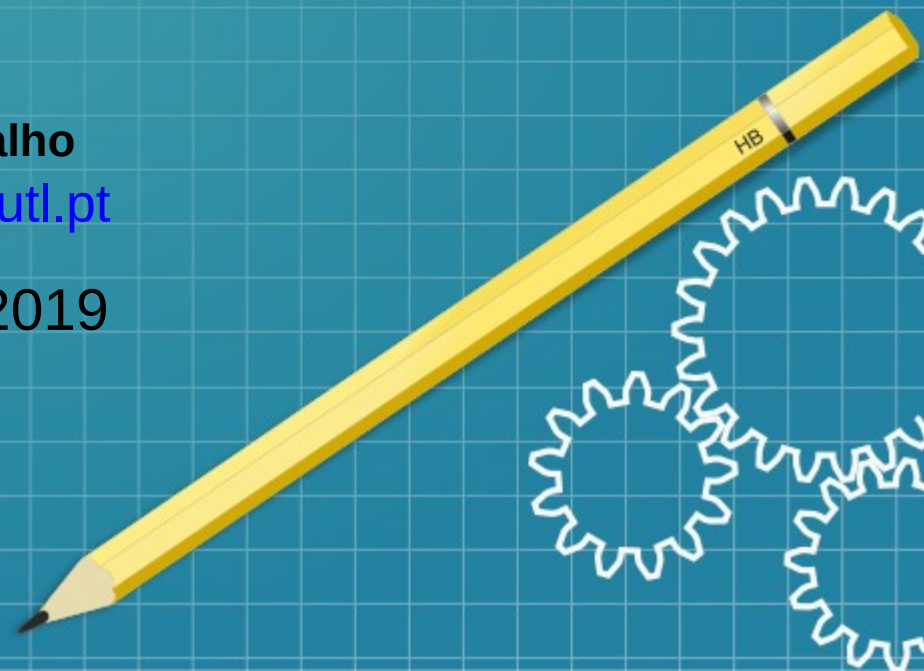
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# Magnetic probes

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## Training activities

- Access to the ISTTOK data base
- Work with the saved signals from the Mirnov coils.
- Calculate and approximation of the plasma current and plasma current centroid position

**Shot #45994**

**<https://github.com/Sakbe/IAEA2019>**



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## Get SDAS signals

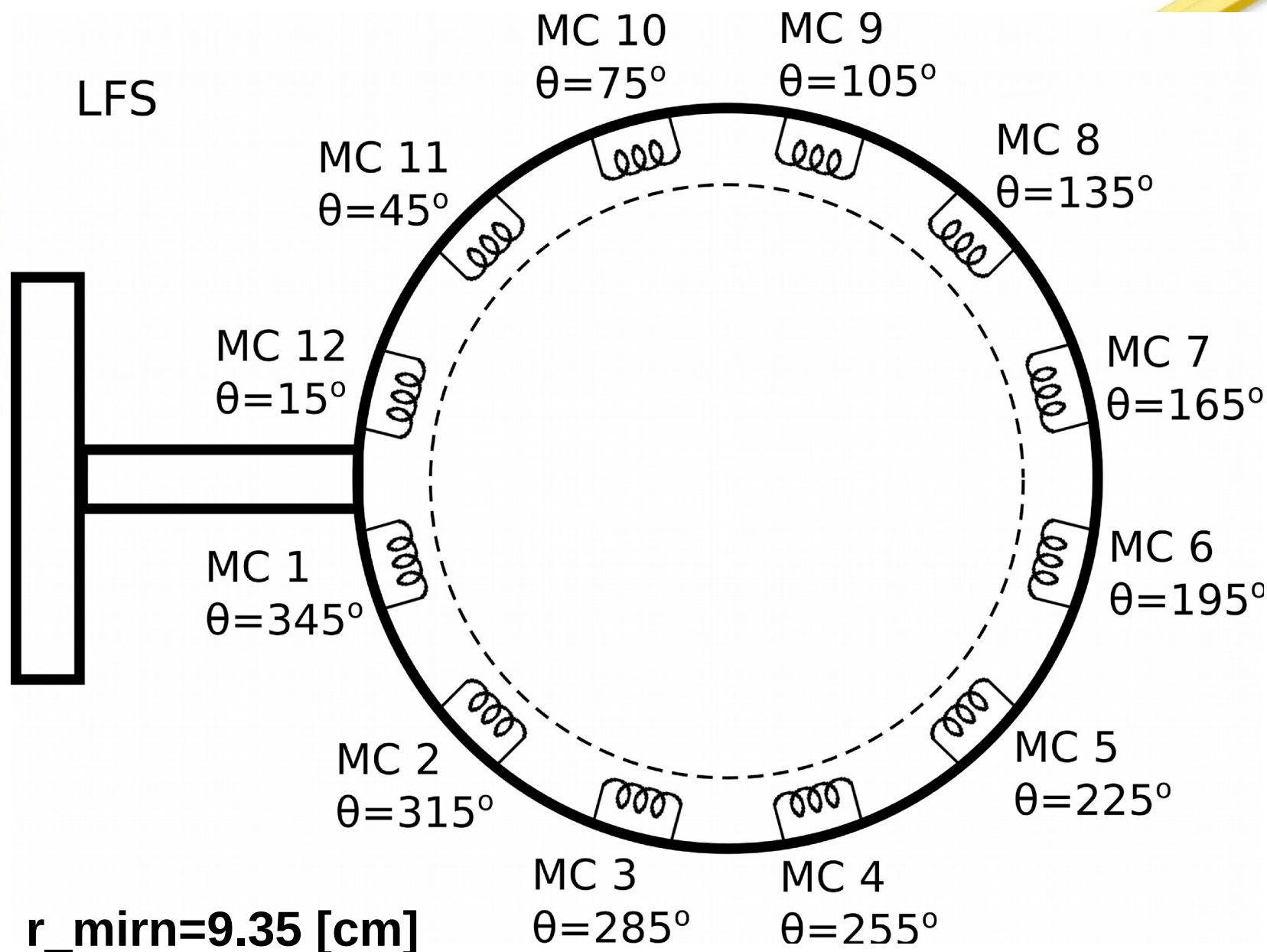
```
mirnv1='MARTE_NODE_IVO3.DataCollection.Channel_129';  
mirnv2='MARTE_NODE_IVO3.DataCollection.Channel_130';  
mirnv3='MARTE_NODE_IVO3.DataCollection.Channel_131';  
mirnv4='MARTE_NODE_IVO3.DataCollection.Channel_132';  
mirnv5='MARTE_NODE_IVO3.DataCollection.Channel_133';  
mirnv6='MARTE_NODE_IVO3.DataCollection.Channel_134';  
mirnv7='MARTE_NODE_IVO3.DataCollection.Channel_135';  
mirnv8='MARTE_NODE_IVO3.DataCollection.Channel_136';  
mirnv9='MARTE_NODE_IVO3.DataCollection.Channel_137';  
mirnv10='MARTE_NODE_IVO3.DataCollection.Channel_138';  
mirnv11='MARTE_NODE_IVO3.DataCollection.Channel_139';  
mirnv12='MARTE_NODE_IVO3.DataCollection.Channel_140';
```

$\text{ADC\_factor} = 0.8605 \times 10^{-11}$



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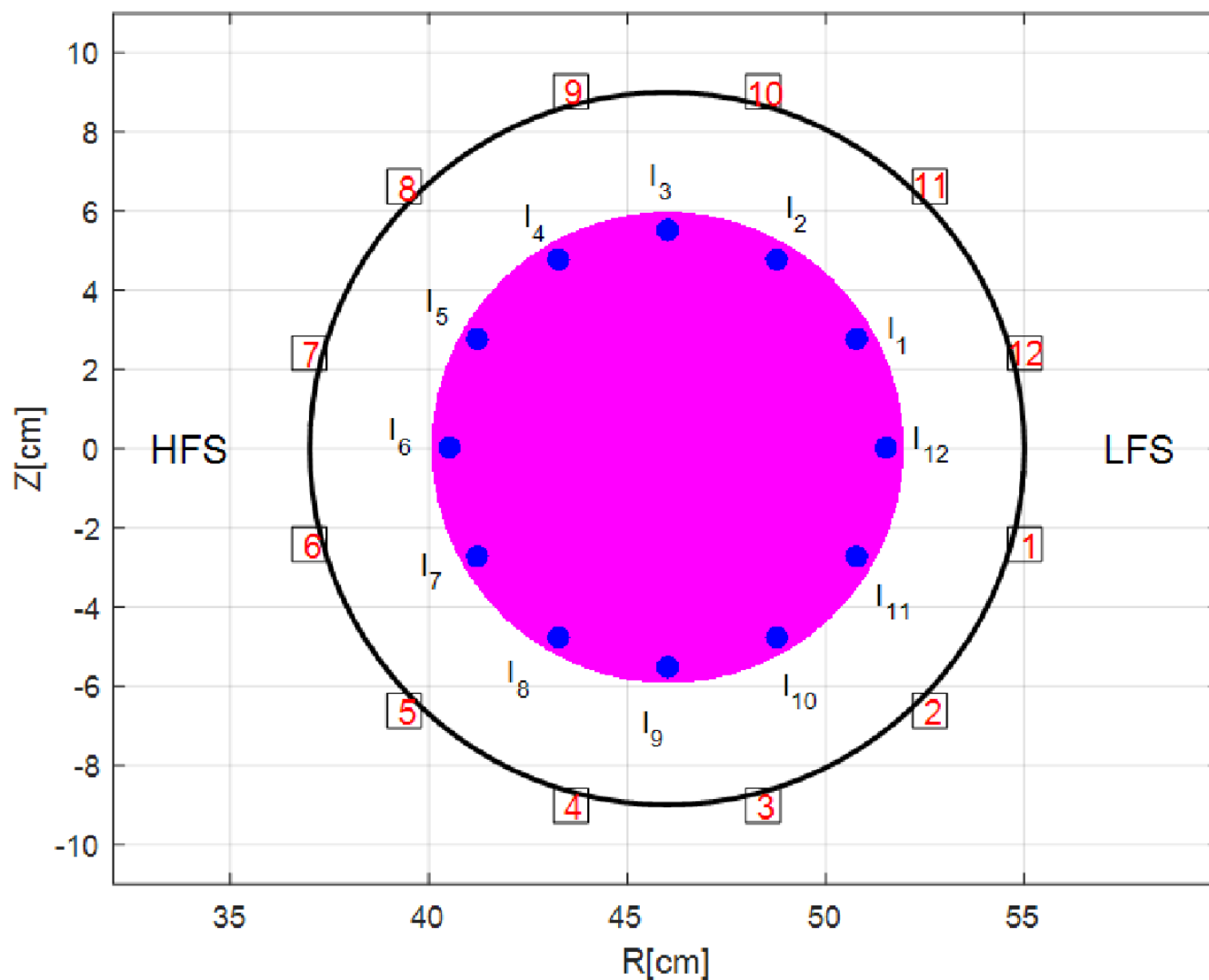






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12 filaments at  
5.5 cm from  
the center

Filament1  $30^\circ$   
Filament2  $60^\circ$

·  
·  
·

Filament12  $0^\circ$



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$$i_{p,f} = M_{fp}^{\dagger} f_p$$

$$r_0 = \sqrt{\frac{\sum_{k=1}^{\mu} i_{p,f_k} r_{p,f_k}^2}{\sum_{k=1}^{\mu} i_{p,f_k}}}$$

$$z_0 = \frac{\sum_{k=1}^{\mu} i_{p,f_k} z_{p,f_k}}{\sum_{k=1}^{\mu} i_{p,f_k}}$$

Where  $(r_{p,f_k}, z_{p,f_k})$  and  $i_{p,f_k}$  are the position and the current of the filament  $k$ ,  $k = 1, 2, \dots, \mu$ , respectively.



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## Get SDAS signals

```
mirnv_corr_flux1='MARTE_NODE_IVO3.DataCollection.Channel_202';  
mirnv_corr_flux2='MARTE_NODE_IVO3.DataCollection.Channel_203';  
mirnv_corr_flux3='MARTE_NODE_IVO3.DataCollection.Channel_204';  
mirnv_corr_flux4='MARTE_NODE_IVO3.DataCollection.Channel_205';  
mirnv_corr_flux5='MARTE_NODE_IVO3.DataCollection.Channel_206';  
mirnv_corr_flux6='MARTE_NODE_IVO3.DataCollection.Channel_207';  
mirnv_corr_flux7='MARTE_NODE_IVO3.DataCollection.Channel_208';  
mirnv_corr_flux8='MARTE_NODE_IVO3.DataCollection.Channel_209';  
mirnv_corr_flux9='MARTE_NODE_IVO3.DataCollection.Channel_210';  
mirnv_corr_flux10='MARTE_NODE_IVO3.DataCollection.Channel_211';  
mirnv_corr_flux11='MARTE_NODE_IVO3.DataCollection.Channel_212';  
mirnv_corr_flux12='MARTE_NODE_IVO3.DataCollection.Channel_213';
```