

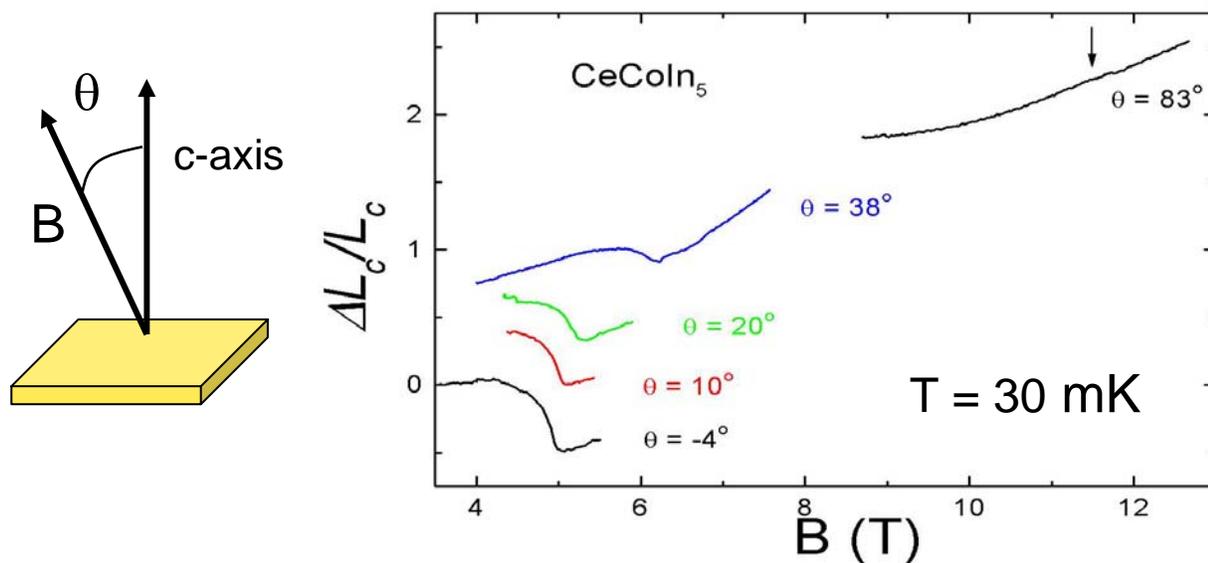
## LOW-TEMPERATURE MAGNETOVOLUME STUDIES ON $\text{CeCoIn}_5$

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$\text{CeCoIn}_5$  is a heavy fermion superconductor ( $T_c = 2.1$  K) that has recently attracted a lot of interest due to a unique phase that is claimed to develop within the mixed state.[1,2] Interestingly, and perhaps associated to that new superconducting state, the upper critical field is detected as a first order transition at low enough temperatures ( $T < 1$  K).

We have studied the magnetovolume effects on  $\text{CeCoIn}_5$  single crystals for different orientations of the applied magnetic field. The experiments were performed in a superconducting magnet at dilution fridge temperatures using a dilatometer made of titanium.

At low temperature, the c-crystallographic axis shows a sharp change at the upper superconducting critical field  $H_{c2}$  when the applied magnetic field is along the c-axis. However, this feature becomes negligible as the field approaches the a-axis, unlike what is observed in specific heat measurements.



**Figure 1.** c-axis magnetostriction for different orientation of the applied magnetic field. The sharp feature observed at low angles is associated with  $H_{c2}$ .

### Acknowledgements

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### References

- [1] Radovan, H.A., *et al.*, Nature, **425**, 51 (2003).
- [2] Bianchi, A., *et al.*, Phys. Rev. Lett., **91**, 187004 (2003).