



Institute of Electrical Engineering SAS

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# SC characterization at IEE Bratislava

# IEE OVERVIEW

## Sample Batches investigated since the last meeting:


*prepared at Siegen Uni:*

- films on **Si** substrates – Nb, NbN, double layers NbN/Nb – *3.8.2022 series*  
27 samples, finalised end-October

## Closest plans:

Helium level in VSM setup is low – warm-up in 1 week

Standard meas. no more possible – issues with low temperature stability (max time ~30min)

Re-start in February 

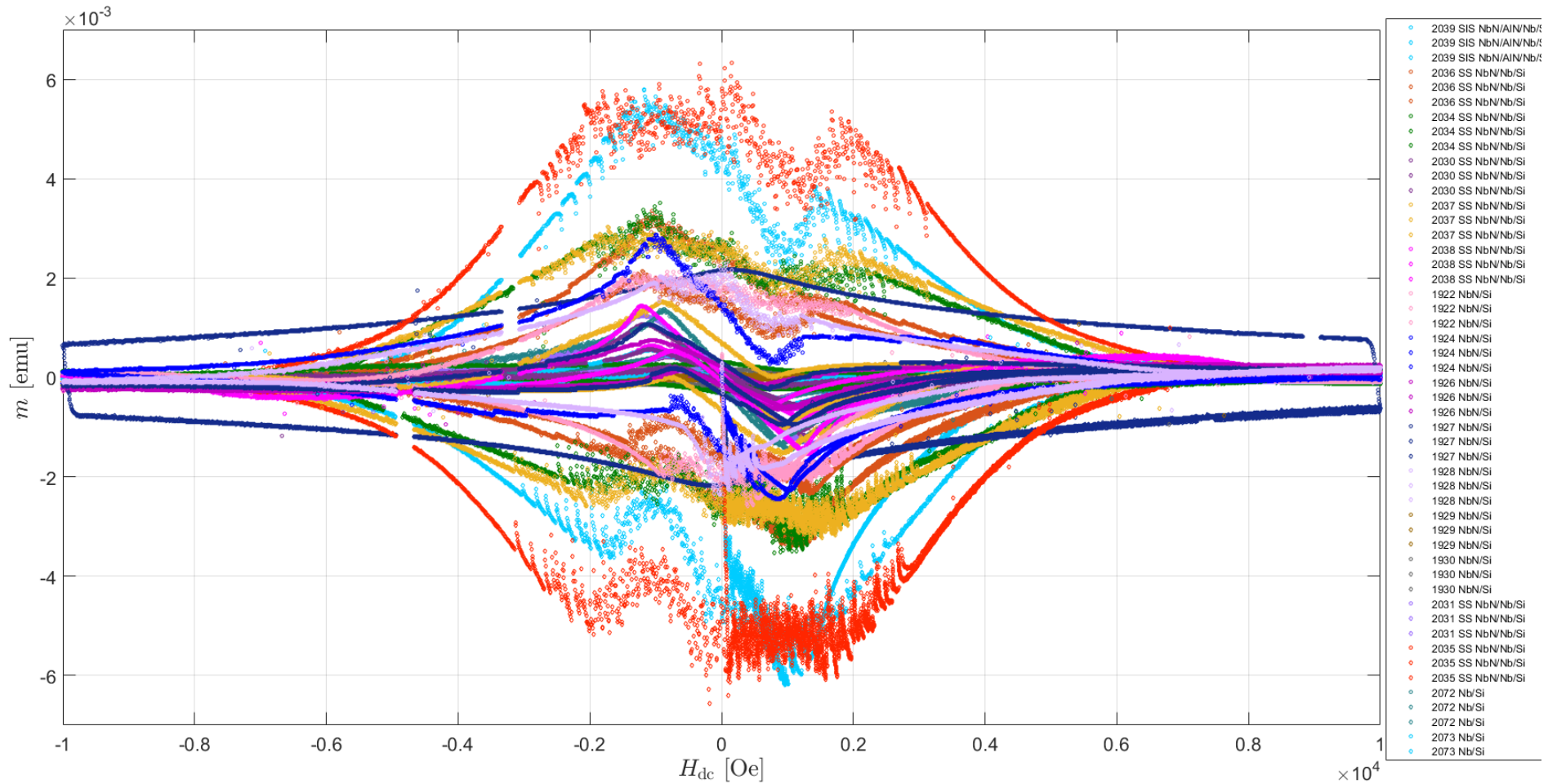
## Table-summary

	Sample	Ben [Oe] (2% crit. at 4.22 K)		Tc [K]	
		Perpend	Parallel		
<b>Nb, NbN, SIS</b>	R2039_SIS(Nb/AlN/NbN)		60	9.25/12.6	flux jump
	R2036_SS(Nb/NbN)		40	9.3/13.9	flux jump
	R2034_SS(Nb/NbN)		35	9.3	flux jump
Substrates:	R2030_SS(Nb/NbN)		1230	9.25	
<b>Si</b>	R2037_SS(Nb/NbN)		55	9.3/11.4	flux jump
	R2038_SS(Nb/NbN)		1140	9.3/12.6	
	R1922_NbN		130	13.2	
	R1924_NbN		320	15.8	
	R1926_NbN		140	15.5	
	R1927_NbN		55	15.5	
	R1928_NbN		14	12.4	
UNI Siegen	R1929_NbN		200	13.9	
03-08-22	R1930_NbN		10	16	
Özdem Sezgin	R2031_SS(Nb/NbN)		1220	9.4	
	R2035_SS(Nb/NbN)		70	9.3	flux jump
	R2072_Nb		920	9.3	
	R2073_Nb		530	9.25	
	R2075_Nb		30	9.3	flux jump
	R2076_Nb		15	9.2	
	R2077_Nb		540	9.2	
	R2078_Nb		880	9.3	
	R2079_Nb		1290	9.25	
	R2085_Nb		40	9.25	flux jump
	R2061_SS(Nb/NbN)		40	9.3/14.8	flux jump
	R2062_SS(Nb/NbN)		150	9.3	
	R2070_SS(Nb/NbN)		145	9.3/14.5	
	R2071_SS(Nb/NbN)		40	9.2/14.5	flux jump

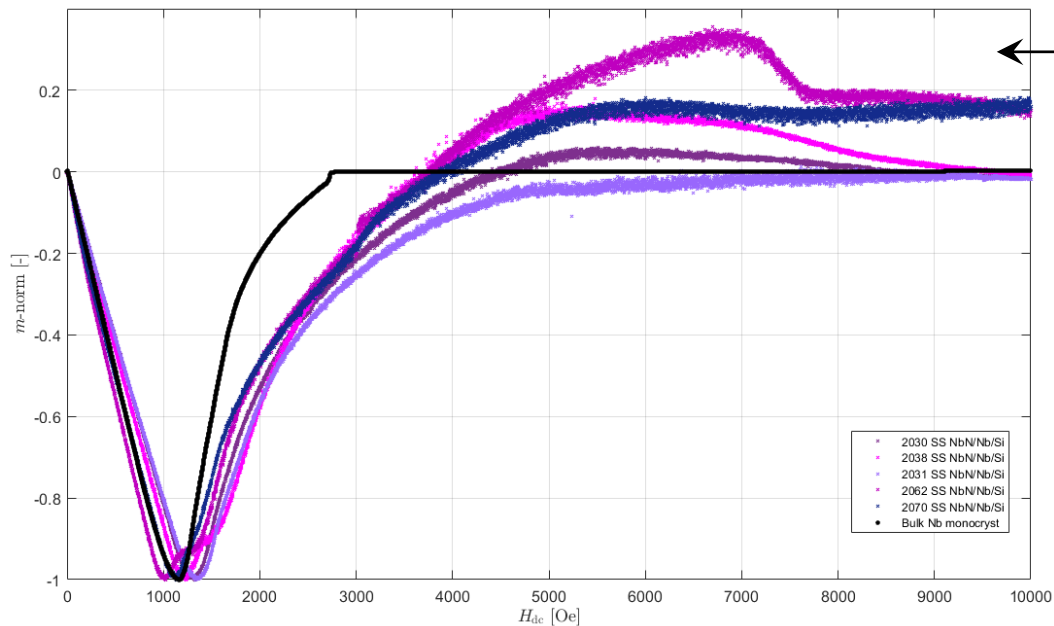
**Flux jumps** observed for many NbN/Nb, for some Nb

# Mag Loops – 3.8.2022series Siegen

All samples, raw loops (4.2K)



# Normalised

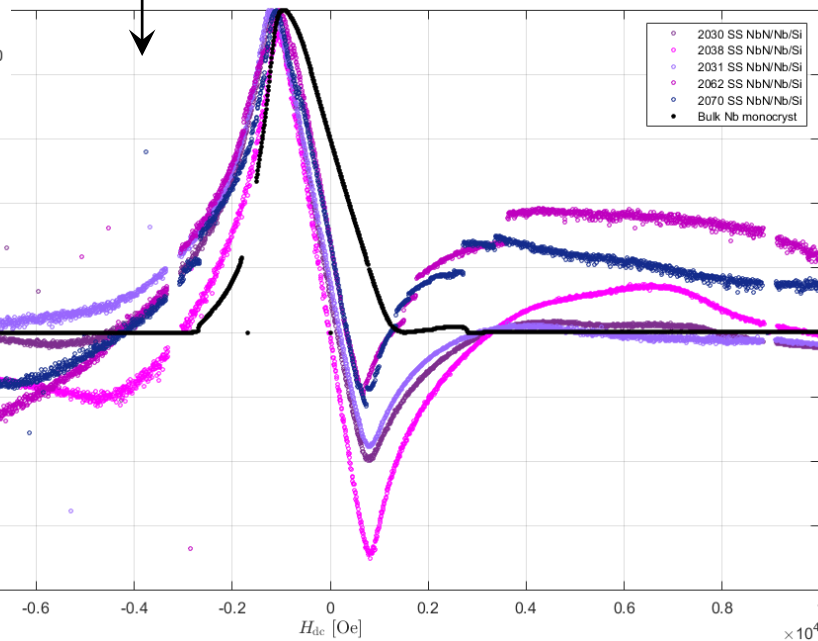


Virgin curves

*Normalised to Max*

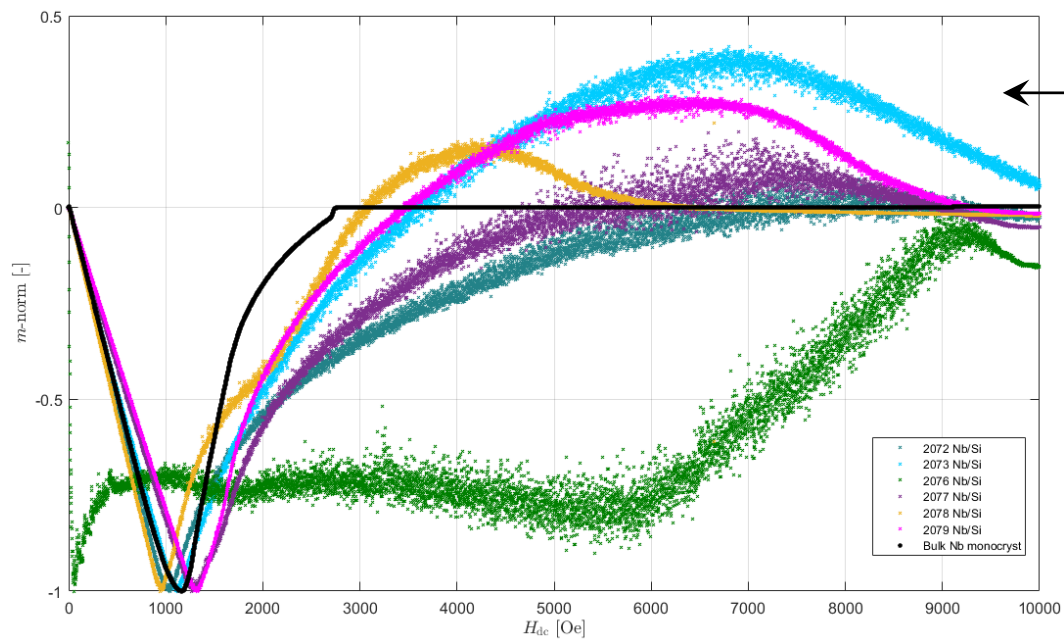
Upper loop branches

**black symbols – Bulk Nb**



**NbN/Nb**

*samples w/o flux jumps in virgin*



Virgin curves

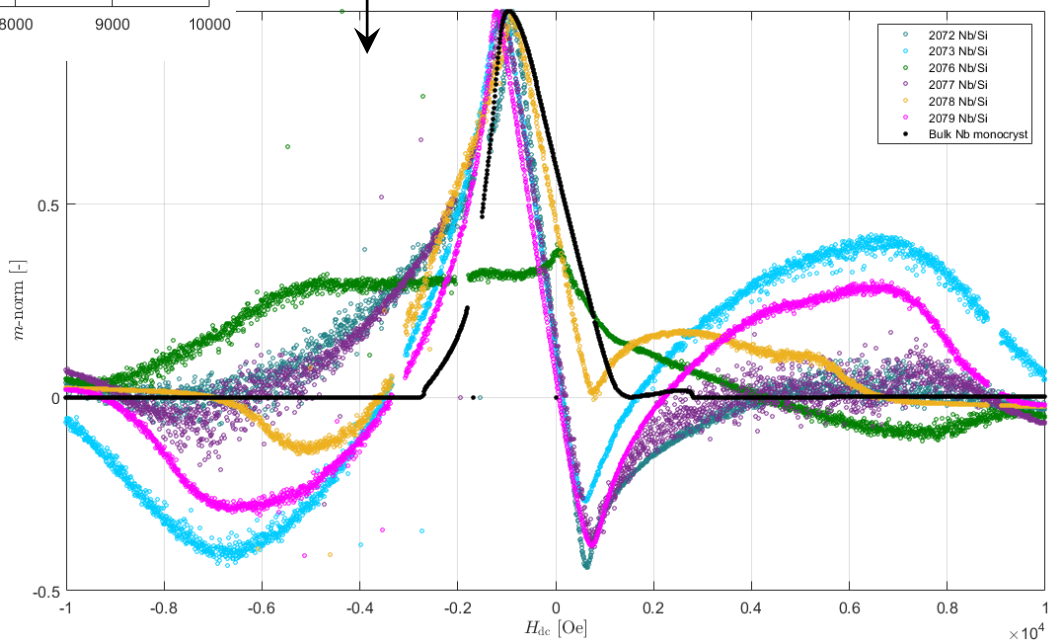
*Normalised to Max*

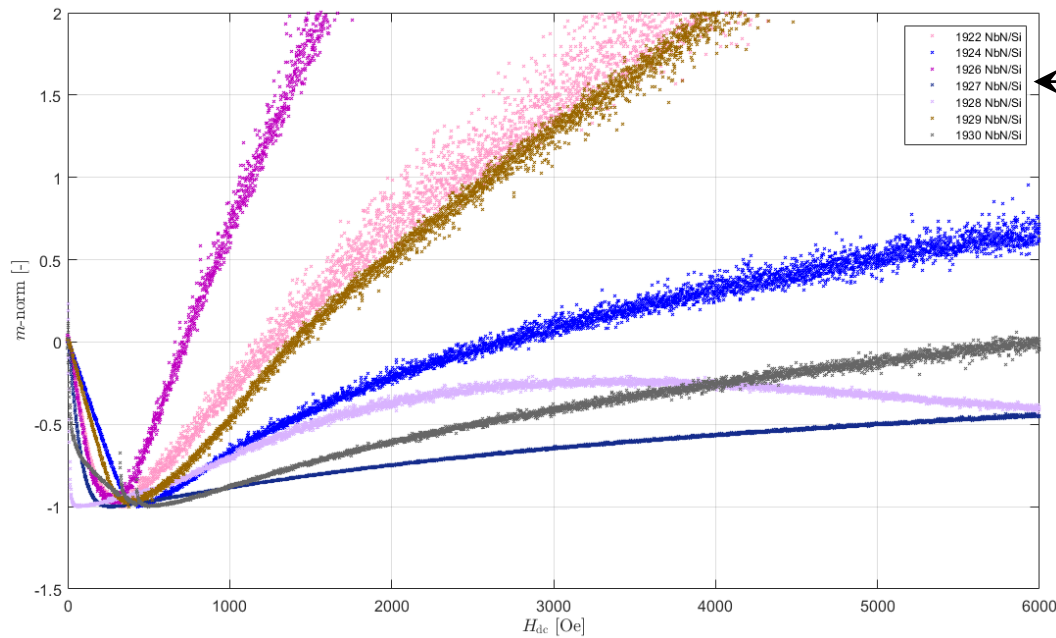
Upper loop branches

**black symbols – Bulk Nb**

**Nb**

*samples w/o flux jumps in virgin*



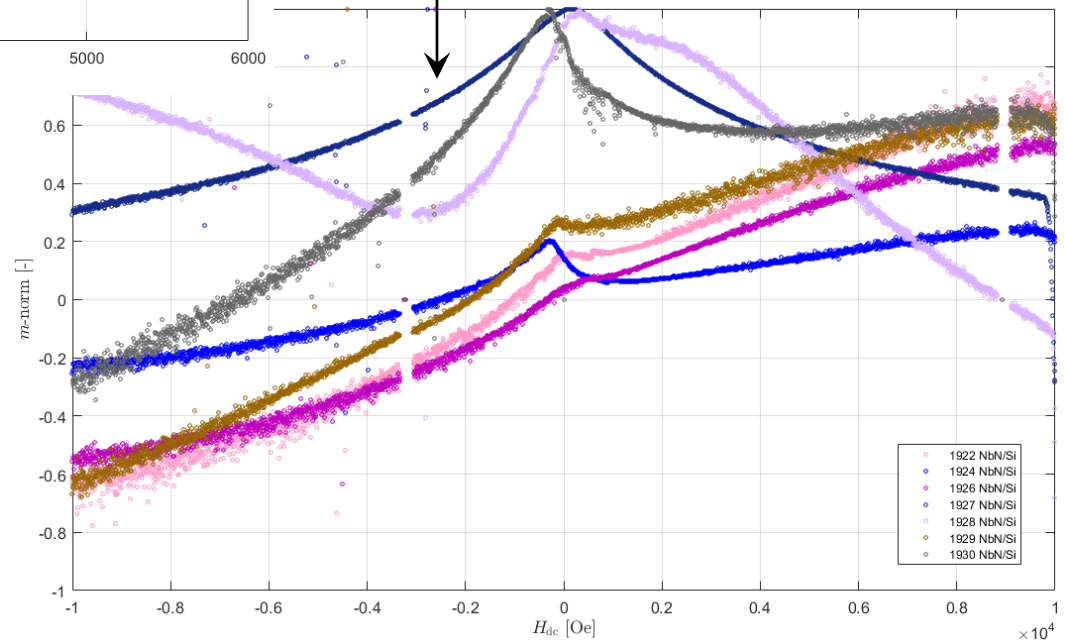


Virgin curves

*Normalised to Max*

Upper loop branches

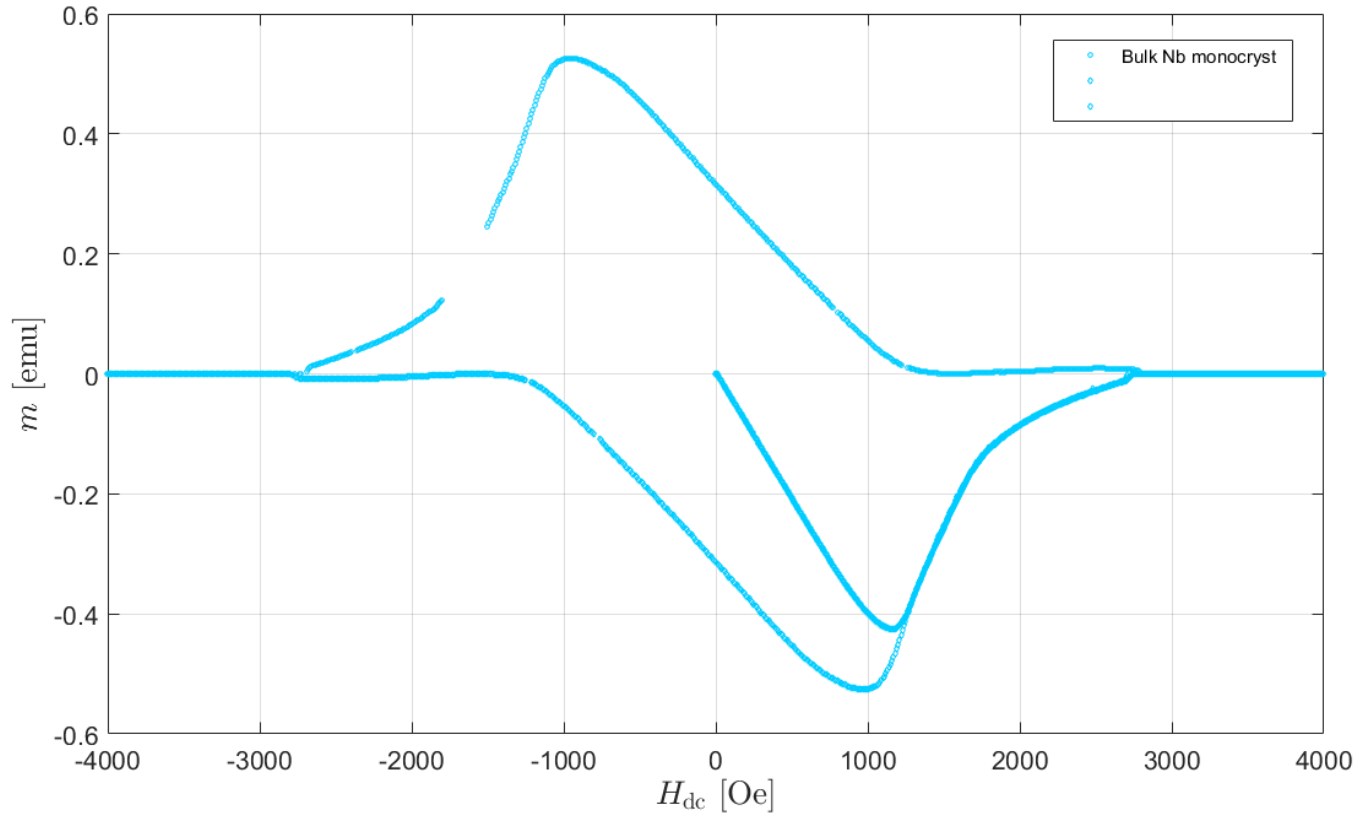
**NbN**



***Thanks for your attention***



# Mag Loop – Bulk Nb monocrystalline, CEA



“raw” Loop (absolute  $m$ )

(at 4.2 K)