- Anomalous RF losses in SRF cavities may occur due to:
    - nanoscale oxide layers
    - impurities (nonmagnetic and magnetic)
    - dislocations and grain boundaries
    - vortices
- The problem is that their ability to contribute to RF losses cannot be "uniquely" determined and depend on particular conditions.
- To disentangle the contribution to losses from different sources, experiments should be designed to "isolate" each mechanism
- Not discussed: what advances in SRF theory are necessary to understand current limitations in SRF cavities?
- There is no clear answer to what an "ideal" surface is, although reducing the concentration of interstitials such as O and H, at the metal/oxide interface should be beneficial

- Measurements of the superheating field in Nb is consistent with GL prediction extrapolated to low temperatures.
- Should be compared with the previous magnetization and calorimetric measurements

- A conformal mapping method, valid for features with size smaller than the penetration depth, relates the local material properties and the "sharpness" of the feature to the quench field.

TABLE VI. The experiments are classified according to type (magnetization or calorimetric). The numbers in parentheses were obtained indirectly from plots or other data. The entries under $D(t)$ are the extrema of $D(t)$. The γ used for the theoretical work was taken from a compilation of Gladstone *et al.* (1969). $N(0)$ was then deduced from γ and the $\lambda(0)$ of the $\alpha^2F(\omega)$.

	T_c K	H_c G	γ mJ/mol K^2	$\Delta C_v(T_c)$ mJ/mol K	$-(\partial H_c/\partial T)_{T_c}$ G/K	$C_{es}/\gamma T_c$	$\gamma T_c^2/H_c^2$	$D(t)$	Ref.
				Pb experiment					
Cal	7.19	(803)	3.00	59	(240)	3.71	(0.134)	0.025	a
Cal	(7.19)	(803)	(3.13)	58	(236)	(3.67)	(0.140)		b
Cal	(7.19)	(803)	(3.13)	53	(227)	(3.36)	(0.140)		c
Mag	7.18	803	3.06	58	238	(3.69)	(0.137)	0.024	d
Mag	7.20	803	3.13	60	237	(3.66)	(0.140)	0.021	e
Mag	7.18	803	(3.13)	(57)	237	(3.57)	(0.140)		f
				Theory					
BCS						2.43	0.168	−0.037	
Isotropic (tunneling, $\omega_c=66$)	7.19	818	3.13	61	247	3.70	0.132	0.025	
$N(0)=0.86\times10^{19}$ meV^{-1} cm^{-3}, molar volume=17.9 cm^3									
				Nb experiment					
Mag	9.20	1960	7.15				(0.146)		g
Mag	9.25	1993	7.90	147	(430)	(3.01)	(0.158)	$^{-0.003}_{+0.003}$	h
Mag	9.20	1980	7.88	127	(401)	(2.75)	(0.158)		i
Cal	9.17	1944	7.53, 7.95	140	415	3.03, 2.92	(0.155)	−0.027	j
Cal	9.19	1994	7.80	(134)	412	2.87	(0.153)	$^{-0.012}_{+0.005}$	k
Cal	9.18		7.72	(144)	427	(3.03)			l
Cal	9.26	2061	7.80	140	419	(2.94)	(0.146)	$^{-0.015}_{+0.003}$	m
Cal	8.70	2000	8.47	153	453	3.07	(0.148)		n
Cal	9.28	2014	7.82	139	417	2.91	0.154	$^{-0.008}_{+0.0004}$	o
Cal	9.23	(1975)	7.80	(135)	(413)	(2.87)	(0.158)	$^{-0.007}_{+0.002}$	p
Cal	9.18	2038	7.74	(134)	413	(2.88)	(0.157)		q
Cal	9.09		7.53	(131)	(409)				r
				Theory					
BCS						2.43	0.168	−0.037	
Isotropic spectrum									
Nb(R)	9.20	2007	7.80	141	422	2.96	0.151	$^{-0.008}_{+0.002}$	
Nb(B)	9.25	1992	7.80	139	418	2.91	0.155	$^{-0.009}_{+0.002}$	
$N(0)=4.64\times10^{19}$ meV^{-1} cm^{-3}, molar volume=10.8 cm^3									

[a]Neighbor *et al.* (1967).
[b]Shiffman *et al.* (1963).
[c]Clement and Quinnell (1952).
[d]Decker *et al.* (1958).
[e]Chanin and Torre (1972).
[f]Rohrer (1960).
[g]Stromberg and Swenson (1962).
[h]Finnemore *et al.* (1966).
[i]French (1968).
[j]Chou *et al.* (1958).
[k]Leupold and Boorse (1964).
[l]Ishikawa and Toth (1971).
[m]Novotny and Meincke (1975).
[n]Brown *et al.* (1953).
[o]Ferreira da Silva *et al.* (1969).
[p]Ohtsuka and Kimura (1971).
[q]Corsan and Cook (1969).
[r]Hershfeld *et al.* (1962).