

Calculable Capacitor Bibliography

The Thompson-Lampard theorem and the first calculable capacitor:

Thompson A.M., Lampard D.G., A New Theorem in Electrostatics and its Application to Calculable Standards of Capacitance, [*Nature*, 1956, **177**, 888](#)

Clothier W.K., A Calculable Standard of Capacitance, [*Metrologia*, 1965, **1**, 36](#)

Thompson A.M., An Absolute Determination of Resistance Based on a Calculable Standard of Capacitance, [*Metrologia*, 1968, **4**, 1](#)

Latest CODATA adjustments, and the original choice of R_{K-90} :

Mohr P.J., Taylor B.N., Newell D.B., CODATA recommended values of the fundamental physical constants: 2006, [*Rev. Mod. Phys.*, 2008, **80**\(2\), 633](#)

Taylor B.N., Witt T.J., New International Electrical Reference Standards Based on the Josephson and Quantum Hall Effects, [*Metrologia*, 1989, **26**, 47](#)

See also the CODATA constants page at NIST:
<http://physics.nist.gov/cuu/Constants/index.html>

Examples of calculable capacitors at various NMIs (not exhaustive):

Jeffery A., Elmquist R.E., Shields J.Q., Lee L.H., Cage M.E., Shields S.H., Dziuba R.F., Determination of the von Klitzing constant and the fine-structure constant through a comparison of the quantized Hall resistance and the ohm derived from the NIST calculable capacitor, [*Metrologia*, 1998, **35**, 83](#)

Small G.W., Ricketts B.W., Coogan P.C., Pritchard B.J., Sovierzoski M.M.R., A new determination of the quantized Hall resistance in terms of the NML calculable cross capacitor, [*Metrologia*, 1997, **34**, 241](#)

Trapon G., Thévenot O., Lacueille J.-C., Poirier W., Determination of the von Klitzing constant R_K in terms of the BNM calculable capacitor – fifteen years of investigations, [*Metrologia*, 2003, **40**, 159](#)

Jones K., Corney A.C., The PEL Calculable Capacitor, [*Metrologia*, 1987, **24**, 1](#)

Relevant recent BIPM publications:

Delahaye F., Goebel R., Evaluation of the frequency dependence of the resistance and capacitance standards in the BIPM quadrature bridge, [IEEE Trans. Instr. and Meas., 2005, 54\(2\), 533](#)

Fletcher N., Goebel R., Wang Y., Bilateral comparison of 10 pF capacitance standards (ongoing BIPM key comparison BIPM.EM-K14.a) between the NIST, United States and the BIPM, June 2007–March 2008, [Metrologia Technical Supplement, 2010, 47, 01013](#)

Fletcher N., Goebel R., A current comparator bridge for the direct measurement of 51.6 k Ω against the quantised Hall resistance, [Precision Electromagnetic Measurements \(CPEM\), 2010 Conference on, 13-18 June 2010, Daejeon \(Rep. of Korea\), 575-576](#)