

## Vorlesung: Fourier-Analysis

### Literatur

#### A) Spezialliteratur zur Fourier-Analysis

##### I) Ältere Lehrbücher (Klassiker; etwa 1930–1960)

###### $\alpha$ ) Fourier-Reihen

- 1) W. Rogosinski: Fouriersche Reihen. Göschen, Berlin 1930 = Fourier Series. Chelsea Publ., New York 1959.
- 2) A. Zygmund: Trigonometrical Series (1935). Dover Publ., New York 1955.  
Trigonometric Series I, II (1959). Cambridge Univ. Press, Cambridge 1968.
- 3) S. Kaczmarz – H. Steinhaus: Theorie der Orthogonalreihen (1935). Chelsea Publ., New York 1951.
- 4) G.H. Hardy – W.W. Rogosinski: Fourier Series (1944). Cambridge Univ. Press, Cambridge 1962.
- 5) N.K. Bari: A Treatise on Trigonometric Series I, II (1961). Pergamon Press, New York 1964.

###### $\beta$ ) Fourier-Transformation

- 1) H. Burkhardt: Trigonometrische Reihen und Integrale. In: Enzyklopädie der Mathematischen Wissenschaften, Bd. II.1.2 Analysis. Teubner, Leipzig 1904–1916, pp. 819–1354.
- 2) S. Bochner: Lectures on Fourier Integrals (1932). Princeton Univ. Press, Princeton 1959.
- 3) N. Wiener: The Fourier Integral and Certain of its Applications. Dover Publ., New York 1933.
- 4) R.E.A.C. Paley – N. Wiener: Fourier Transforms in the Complex Domain. Amer. Math. Soc., New York 1934.
- 5) E.C. Titchmarsh: Introduction to the Theory of Fourier Integrals (1937). Oxford Univ. Press, Oxford 1948.
- 6) T. Carleman: L'intégral de Fourier et questions qui s'y rattachent. Publ. Sci. Inst. Mittag-Leffler, Uppsala 1944.
- 7) S. Bochner – K. Chandrasekharan: Fourier Transforms. Princeton Univ. Press, Princeton 1949.

##### II) Neuere Lehrbücher (ab 1960)

- 1) R.R. Goldberg: Fourier Transforms (1961). Cambridge Univ. Press, Cambridge 1965.
- 2) R.T. Seeley: An Introduction to Fourier Series and Integrals. Benjamin, New York 1966.
- 3) C. Lanczos: Discourse on Fourier Series. Oliver and Boyd, London 1966.
- 4) R.E. Edwards: Fourier Series I, II. Holt, Rinehart and Winston, New York 1967 = Springer, Berlin 1979/82.

- 5) Y. Katznelson: An Introduction to Harmonic Analysis (1968). Dover Publ., New York 1976.
- 6) E.M. Stein: Singular Integrals and Differentiability Properties of Functions. Princeton Univ. Press, Princeton 1970.
- 7) E.M. Stein – G. Weiss: Introduction to Fourier Analysis on Euclidean Spaces. Princeton Univ. Press, Princeton 1971.
- 8) G.O. Okikiolu: Aspects of the Theory of Bounded Integral Operators in  $L^p$ -Spaces. Acad. Press, New York 1971.
- 9) I.N. Sneddon: The Use of Integral Transforms. McGraw-Hill, New York 1972.
- 10) H. Dym – H.P. McKean: Fourier Series and Integrals. Acad. Press, New York 1972.
- 11) R.E. Edwards – G.I. Gaudry: Littlewood-Paley and Multiplier Theory. Springer, Berlin 1977.
- 12) C.S. Rees – S.M. Shah – C.V. Stanojevic: Theory and Applications of Fourier Analysis. Dekker, New York 1981.
- 13) H. Helson: Harmonic Analysis. Addison-Wesley, London 1983.
- 14) H.-J. Schmeißer – H. Triebel: Topics in Fourier Analysis and Function Spaces. Wiley, New York 1987.
- 15) K.M. Davis – Y.-C. Chang: Lectures on Bochner-Riesz Means. Cambridge Univ. Press, Cambridge 1987.
- 16) N.I. Achieser: Lectures on Integral Transforms. Amer. Math. Soc., New York 1988.
- 17) J.S. Walker: Fourier Analysis. Oxford Univ. Press, Oxford 1988.
- 18) T.W. Körner: Fourier Analysis. Cambridge Univ. Press, Cambridge 1988.
- 19) K. Chandrasekharan: Classical Fourier Transforms. Springer, Berlin 1989.
- 20) J.R. Hanna – J.H. Rowland: Fourier Series, Transforms, and Boundary Value Problems. Wiley, New York 1990.
- 21) Yu.A. Brychkov – H.-J. Glaeske – A.P. Prudnikov – Vu Kim Tuan: Multidimensional Integral Transformations. Gordon and Breach, Philadelphia 1992.
- 22) R. Lasser: Introduction to Fourier Series. Dekker, New York 1996.
- 23) L. Zhizhiashvili: Trigonometric Fourier Series and their Conjugates. Kluwer, Dordrecht 1996.
- 24) V.I. Burenkov: Sobolev Spaces on Domains. Teubner, Stuttgart 1998.

## **B) Fourier-Analysis im Rahmen allgemeiner Einführungen in andere Gebiete**

### **I) Abstract Harmonic Analysis**

- 1) L.H. Loomis: An Introduction to Abstract Harmonic Analysis. Van Nostrand, New York 1953.
- 2) W. Rudin: Fourier Analysis on Groups. Interscience Publ., New York 1962.
- 3) H. Reiter: Classical Harmonic Analysis and Locally Compact Groups. Clarendon Press, Oxford 1968.
- 4) E. Hewitt – K.A. Ross: Abstract Harmonic Analysis I, II. Springer, Berlin 1963/70.

- 5) W. Schempp – B. Dreseler: Einführung in die harmonische Analyse. Teubner, Stuttgart 1980.

## II) Distributionentheorie

- 1) L. Schwartz: Théorie des distributions I, II. Hermann, Paris 1950/51.
- 2) A.H. Zemanian: Distribution Theory and Transform Analysis. McGraw-Hill, New York 1965.
- 3) H. Bremermann: Distributions, Complex Variables, and Fourier Transforms. Addison-Wesley, London 1965.
- 4) J. Horváth: Topological Vector Spaces and Distributions. Addison-Wesley, London 1966.
- 5) W. Walter: Einführung in die Theorie der Distributionen. Bibl. Inst., Mannheim 1970.
- 6) L. Jantscher: Distributionen. De Gruyter, Berlin 1971.
- 7) Z. Szmydt: Fourier Transformation and Linear Differential Equations. Reidel, Dordrecht 1977.
- 8) R.S. Strichartz: A Guide to Distribution Theory and Fourier Transforms. CRC Press, Boca Raton 1994.

## III) Integrationstheorie

- 1) E. Hewitt – K. Stromberg: Real and Abstract Analysis. Springer, Berlin 1965.
- 2) E. Asplund – L. Bungart: A First Course in Integration. Holt, Rinehart and Winston, New York 1966.
- 3) W. Rudin: Real and Complex Analysis. McGraw-Hill, New York 1966.
- 4) A.C. Zaanen: Continuity, Integration and Fourier Theory. Springer, Berlin 1989.

## IV) Funktionalanalysis

- 1) S. Banach: Théorie des opérations linéaires (1932). Chelsea Publ., New York 1955.
- 2) E. Hille bzw. E. Hille – R.S. Phillips: Functional Analysis and Semi-Groups. Amer. Math. Soc., New York 1948 bzw. 1957.
- 3) N. Dunford – J.T. Schwartz: Linear Operators I–III. Interscience Publ., New York 1958–1971.
- 4) R.E. Edwards: Functional Analysis. Holt, Rinehart and Winston, New York 1965.
- 5) H. Triebel: Höhere Analysis. VEB Deutscher Verlag der Wiss., Berlin 1972 = Higher Analysis. Barth, Leipzig 1992.
- 6) R. Larsen: Functional Analysis. Dekker, New York 1973.
- 7) W. Rudin: Functional Analysis. McGraw-Hill, New York 1973.
- 8) M. Cotlar – R. Cignoli: An Introduction to Functional Analysis. North-Holland, Amsterdam 1974.
- 9) C. Sadosky: Interpolation of Operators and Singular Integrals. Dekker, New York 1979.
- 10) R.M. Young: An Introduction to Nonharmonic Fourier Series. Acad. Press, New York 1980.
- 11) C. Bennett – R. Sharpley: Interpolation of Operators. Acad. Press, New York 1988.
- 12) R. Meise – D. Vogt: Introduction to Functional Analysis. Clarendon Press, Oxford 1997.

- 13) H. Heuser: Funktionalanalysis, Theorie und Anwendung. Teubner, Stuttgart 1992.

#### **V) Partielle Differentialgleichungen**

- 1) A. Friedman: Generalized Functions and Partial Differential Equations. Prentice-Hall, Englewood Cliffs 1963.
- 2) L. Hörmander: [The Analysis of] Linear Partial Differential Operators I ([1963], 1983). Springer, Berlin 1990.
- 3) M. Schechter: Spectra of Partial Differential Operators. North-Holland, Amsterdam 1971.
- 4) S. Mizohata: The Theory of Partial Differential Equations. Cambridge Univ. Press, Cambridge 1973.

#### **VI) Wahrscheinlichkeitstheorie**

- 1) W. Feller: An Introduction to Probability Theory and its Applications I, II. Wiley, New York 1950–66.
- 2) S. Bochner: Harmonic Analysis and the Theory of Probability. California Univ. Press, Los Angeles 1960.
- 3) E. Lukacs: Characteristic Functions. Griffin, London 1960.
- 4) T. Kawata: Fourier Analysis in Probability Theory. Acad. Press, New York 1972.

#### **VII) Orthogonalentwicklungen**

- 1) G. Alexits: Konvergenzprobleme der Orthogonalreihen. Verlag der Ungarischen Akad. der Wiss., Budapest 1960 = Convergence Problems of Orthogonal Series. Pergamon Press, New York 1961.
- 2) H.F. Davis: Fourier Series and Orthogonal Functions. Allyn and Bacon, Boston 1963.
- 3) G. Freud: Orthogonale Polynome. Birkhäuser, Basel 1969.

#### **VIII) Approximationstheorie und Numerik**

- 1) C. de La Vallée Poussin: Lecons sur l'approximation des fonctions d'une variable réelle (1919). Chelsea Publ., New York 1970.
- 2) N.I. Achieser: Vorlesungen über Approximationstheorie (1947). Akademie Verlag, Berlin 1967.
- 3) P.L. Butzer – R.J. Nessel: Fourier Analysis and Approximation. Birkhäuser, Basel 1971 und Acad. Press, New York 1971.
- 4) H.S. Shapiro: Topics in Approximation Theory. Springer, Berlin 1971.
- 5) P. Brenner – V. Thomée – L.B. Wahlbin: Besov Spaces and Applications to Difference Methods for Initial Value Problems. Springer, Berlin 1975.

#### **IX) Elektrotechnik**

- 1) A. Papoulis: The Fourier Integral and its Applications. McGraw-Hill, New York 1962.
- 2) E.O. Brigham: The Fast Fourier Transform. Prentice-Hall, Englewood Cliffs, 1974.
- 3) A. Papoulis: Signal Analysis. McGraw-Hill, New York 1977.
- 4) R.N. Bracewell: The Fourier Transform and its Applications. McGraw-Hill, New York 1978.
- 5) H. Babovsky – Th. Beth – H. Neunzert – M. Schulz-Reese: Mathematische Methoden in der Systemtheorie: Fourieranalysis. Teubner, Stuttgart 1987.

- 6) K.R. Rao – P. Yip: Discrete Cosine Transform. Acad. Press, New York 1990.

### C) Zusätzliche Literatur

- 1) D.V. Widder: The Laplace Transform. Princeton Univ. Press, Princeton 1941.
- 2) I.P. Natanson: Konstruktive Funktionentheorie (1949). Akademie Verlag, Berlin 1955; engl.: Unger, New York 1964/65 (3 Bde.).
- 3) I.P. Natanson: Theorie der Funktionen einer reellen Veränderlichen (1957). Akademie Verlag, Berlin 1961.
- 4) E. Hewitt: Topics in Fourier Analysis. Univ. Washington, Seattle 1959.
- 5) L. Hörmander: Estimates for translation invariant operators in  $L^p$  spaces. *Acta Math.* **104** (1960), 93–139.
- 6) A.F. Timan: Theory of Approximation of Functions of a Real Variable (1960). Pergamon Press, New York 1963.
- 7) L. Carleson: On convergence and growth of partial sums of Fourier series. *Acta Math.* **116** (1966), 135–157.
- 8) R. Larsen: The Multiplier Problem. Springer, Berlin 1969.
- 9) J. Boman: Saturation problems and distribution theory. In B VIII 4, pp. 259–266.
- 10) K. Endl – W. Luh: Analysis I–III. Aula-Verlag, Wiesbaden 1983.
- 11) H. Heuser: Lehrbuch der Analysis 1, 2. Teubner, Stuttgart 1989/90.
- 12) H.L. Royden: Real Analysis. Macmillan, New York 1963.
- 13) Y.M. Berezansky – Z.G. Shiftel – G.F. Us: Functional Analysis I,II (1990). Birkhäuser, Basel 1996.