Göttingen's SUB as Repository for the Papers of Distinguished Mathematicians

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For over a century, the Göttingen State and University Library (SUB) has served as an important repository for writings, correspondence and other documents of value for the history of mathematics. These collections date back to the early years of the university when the polymath mathematician Abraham Gotthelf Kästner and the astronomer Tobias Mayer were among its more prominent faculty members. Today, the Department of Special Collections (Spezialsammlungen) in the old library of the SUB houses over 50 collections of papers as bequests (Nachlässe) of prominent mathematicians, most of whom were associated with the university. Since 1997, information relating to these holdings can be found in the databank HANS (http://hans.sub.uni-goettingen.de/), an acronym for Handschriften, Autographen, Nachlässe and Sonderbestände.

Many of these collections are relatively recent acquisitions awaiting future investigation. In 1992, the SUB entered into an agreement with the Deutsche Mathematiker-Vereinigung (DMV, German Mathematical Society) in order to create the Central Archive for German Mathematics Bequests (Patterson/Rohlfing/Schappacher 2003). For several years, the Göttingen Academy of Sciences was able to provide financial support that helped enable these newer acquisitions to be catalogued and made available to researchers. Some of the newly acquired Nachlässe, for example those of Erich Hecke and Emil Artin who were colleagues in Hamburg, document the lives and works of mathematicians who spent most of their careers outside Göttingen. As such, the Central Archive at the SUB plays a role similar to that of the library at the University of Texas in Austin, which houses an even more extensive collection in its Archives of American Mathematics (AAM) – http://www.cah.utexas.edu/collections/math.php. With one exception, there would seem to be virtually no overlap between the mathematicians represented by documents in these two archives. If that impression is correct then that distinction goes to Max Dehn, one of Hilbert's star pupils whose posthumous papers were donated to the AAM in 1979 by Wilhelm Magnus, acting on behalf of Dehn's widow, Toni. Several letters from Dehn can be found among Hilbert's papers but also in other Nachlässe in the SUB.

It was surely not an accident that the DMV chose the SUB in Göttingen as the ideal site for a central archive. No doubt there were many practical matters to consider but one factor would have been obvious, namely the rich archival resources already located there. These included the Nachlässe of Gauss, Riemann, Dedekind, Klein and Hilbert, five central figures associated with the Göttingen mathematical tradition. Taking a glance backward to the late 18th century, we should briefly observe that Göttingen's library had long played a significant role in shaping its early mathematical culture.

When the young Carl Friedrich Gauss had to account for why he chose to study in Göttingen rather than at the local university in Helmstedt, he gave a simple reason: books (Küssner 1979, 48). Already as a pupil at the Collegium Carolinum in his native Braunschweig, Gauss was reading works as difficult as Newton's *Principia*, which he was able to purchase in 1794. Thanks to a stipend from Duke Karl Wilhelm Ferdinand, he was later granted the opportunity to spend three years pursuing his intellectual interests, which were by no means confined to mathematics (Goldstein /Schappacher/Schwermer 2007). Still, he knew that to become an educated and versatile mathematician he would have to have ready access to current scientific literature. Helmstedt, though a much older university than Göttingen's Georgia Augusta, simply lacked the resources of the newer institution, which, almost from its founding in 1737, had a far better library, not to mention faculty. This was no mystery: the university's patron was the Duke of Hanover, better known in the English-speaking world as George II, King of Great Britain and Ireland, and Prince-Elector of the Holy Roman Empire. So Gauss had good reason to believe he would be pleased with the scholarly apparatus housed in Göttingen's university library. Travelling the 90 km by foot, he arrived in October 1795 for the Winter semester. A short time later, he wrote to his former teacher, Eberhard A. W. Zimmermann, that he was impressed with the library holdings and had already begun studying several volumes from the Proceedings of the Petersburg Academy. He thereafter made regular use of it (Küssner 1979).

The following Spring, Gauss recorded the first entry in his mathematical diary (30 March 1796): "Principia quibus innititur sectio circuli, ac divisibilitas eiusdem geometrica in septemdecim partes etc." (The principles upon which the division of the circle depends, and geometrical divisibility of the same into seventeen parts, etc.) (Klein 1903, Gray 1984). He had cracked the problem of determining which regular polygons can be constructed by straightedge and compass alone, including the first non-classical case: the 17-gon. Commentators

could henceforth note that the theory set forth by Euclid in Book IV of the *Elements* had now been completed. This breakthrough was quickly followed by an incredible cascade of new discoveries, including a proof of the $n = 3$ case of Fermat's conjecture, according to which every number can be written as the sum of at most n n-gonal numbers. Gauss thus wrote on 10 July 1796: "EYPHKA! num = Δ + Δ + Δ." By the end of the year, though still not yet 20 years of age, Gauss had already filled his diary with 49 entries for results he had obtained during the preceding nine months!

Today, any viewer can glance through the original pages of Gauss' diary just by clicking on the link: http://webdoc.sub.gwdg.de/ebook/e/2005/gausscd/html/kapitel_tagebuch.htm. Oddly enough, however, the introductory text begins by asserting that this booklet was first discovered in the Gauss Nachlass in 1928! Perhaps this error will have been corrected by the time this text appears in print but, in any case, the story behind Gauss' diary should certainly be better known. In fact, it was first found three decades earlier, as Felix Klein reported in his lectures on 19th century mathematics (Klein 1926, 30). Klein was, in fact, the first to publish Gauss' diary along with some preliminary commentary. This appeared in a special Festschrift in 1901, which was then reprinted two years later in *Mathematische Annalen* (Klein 1903). The discovery itself was made by Paul Stäckel in 1899 when he visited a grandson of Gauss in Hameln.

Although this tiny booklet has since taken its unique place in the annals of mathematics, its survival was largely a matter of lucky circumstance. Shortly after Gauss' death in 1855, his Nachlass was divided so that the "scientific portion" could be sold to the Hanoverian Government and acquired by the Göttingen Scientific Society. Responsibility for ordering the documents and publishing the Gauss *Werke* was first placed in the hands of his former student, Ernst Schering. Work proceeded slowly, however, which was a source of frustration for Klein, who had to await Schering's death in 1897 before he could begin to manage this project. He quickly came to realise that Gauss' papers had been sorted out and divided decades earlier, a circumstance that led to the loss of his diary, which had been classified as a non-scientific work! Thereafter, Klein threw himself into this project with passion; between 1898 and 1921, he published no fewer than 14 separate reports on the course of the work on the Gauss edition. This undertaking went on long afterwards and was only completed in 1933. For those who can afford the luxury, reprints of the 12 volumes of the Gauss *Werke* can now be purchased from the Cambridge Library Collection. As a far more affordable alternative, the SUB provides cost-free access to all of these volumes via http://gdz.sub.uni-goettingen.de/dms/load/toc/?PID=PPN235957348.

Felix Klein's career in Göttingen marks a watershed period, during which he saw himself as the grand impresario who would usher in the new while paying homage to the old (Parshall & Rowe 1994). His grand aim and vision was to build a bridge joining the tradition of Gauss and Riemann with the modern era of 20th century research mathematics. As the principal architect of several innovative reforms, he took an active part in cultivating the legacies of his distinguished predecessors. He did so by drawing on the resources of the Göttingen Scientific Society (forerunner of the Göttingen Academy) but also by engaging a small army of allies and assistants. These local efforts in Göttingen can be seen as part of a broader modernisation process in Prussia, part of which affected the state libraries. In fact, Klein's appointment in Göttingen in 1886 coincided with that of Karl Dziatzko as director of the university library. As Göttingen's first professor of library science, Dziatzko helped implement new standards that would be adopted elsewhere. Thus, like Klein, he took part in sweeping reforms that would eventually transform the Prussian universities under the aegis of the ministerial official Friedrich Althoff (Rowe 1989).

Klein's work in connection with the Gauss Nachlass was primarily organisational in nature, whereas his interest in Riemann's ideas and work ran far deeper. Moreover, a quite different set of circumstances surrounded Riemann's posthumous papers. Riemann only taught for a few years in Göttingen before his declining health forced him to take long periods of leave in Italy. He died there in 1866 at the age of 40. Riemann's Nachlass was thus far smaller than that of Gauss, though it presented special challenges for the three experts who first worked through it: Richard Dedekind, Alfred Clebsch and Heinrich Weber. Dedekind's efforts led to the posthumous publication of three unknown papers, including the famous lecture of 1854 on the foundations of geometry (Riemann 1868). Following the sudden and unexpected death of Clebsch in 1872, Weber agreed to complete the task of preparing Riemann's *Werke*, which appeared a few years later (Riemann 1876). By the 1890s, however, Klein was intent on recovering additional documents, particularly lecture notes taken by some of Riemann's former auditors. This initiative eventually brought to light some 20 sets of lecture notes (Neuenschwander 1988). These were then carefully studied by Max Noether and Wilhelm Wirtinger when they prepared the Nachträge for the expanded edition of Riemann's Collected Works, which was then published (Riemann 1902).

Scholarly interest in Riemann's original works remained strong throughout the 20th century. Erich Bessel-Hagen, a protégé of Klein and close friend of Carl Ludwig Siegel, was actively involved in preserving documents relating to Riemann's life and work. In 1932, Siegel published a number of new results on the Riemann zeta-function based on formulas he had found scattered across papers in the Nachlass (Siegel 1932). Though he discovered no hints in the Nachlass of an Ansatz that might lead to a proof of the Riemann conjecture, Siegel did find and then derive what is today called the Riemann-Siegel formula. He also emphasised how the notes he had found bore witness to Riemann's analytical powers, thereby taking issue with Klein, who often promoted a picture of Riemann as an intuitive genius. Siegel's paper was originally published in the short-lived journal *Quellen und Studien zur Geschichte der Math-*

ematik, Astronomie und Physik (Studien) 2(1932): 45-80. It was later reprinted both in his *Collected Works* (Siegel 1979) as well as in the latest and most comprehensive edition of Riemanns *Gesammelte Mathematische Werke* (Riemann 1990).

After the turn of the century, Klein had moved away from research mathematics to pursue other goals. As his younger colleagues in Göttingen – Hilbert, Minkowski and Schwarzschild – took on the more specialised courses, Klein found time to promote historical studies. Thus, beyond his interest in documenting the scientific achievements of Gauss and Riemann, he also began offering courses on several broader developments that shaped modern mathematics. This culminated with his wartime lectures on 19th century mathematics, which began with a survey of Gauss' work. Typescript copies of these lectures circulated fairly widely after the war, though the first volume (Klein 1926), published posthumously by Richard Courant and Otto Neugebauer, omits some of Klein's more polemical remarks.

As an offshoot of these interests, Klein also established the so-called Mathematiker-Archiv, which collected documents relating to modern mathematical developments. Three of its holdings are particularly noteworthy. Descendents of the geometer Carl Georg Christian von Staudt, who studied under Gauss and later taught for many years in Erlangen, donated a number of manuscripts from his papers. Klein, who held Staudt in high esteem, later added to this collection with a small number of Staudt's handwritings that he presumably acquired in the early 1870s when he taught in Erlangen.

Unfortunately, only a few documents relating to the career of Hermann Minkowski exist today. Several of his letters to Hilbert did survive and can be found in the Hilbert Nachlass; these were published in (Minkowski 1973). In 1915, Arnold Sommerfeld published Minkowski's lecture "Das Relativitätsprinzip" (Minkowski 1915), which was delivered in November 1907 to the Göttingen Mathematical Society. This was Minkowski's original presentation of his new approach to relativity, which became famous from his lecture "Raum und Zeit" of the following year. After his death in early 1909, the text of the first lecture was buried among his papers until Sommerfeld decided to make it better known, publishing it in both the *Annalen der Physik* and in the *Jahresbericht der DMV*. He also persuaded Minkowski's widow to donate her husband's manuscripts on electrodynamics and relativity to the Göttingen archives. Aside from these, the Jewish National and University Library at Hebrew University has custody of several notebooks that Minkowski used for lecture courses presented in Göttingen. Scans of these are available online as part of the ECHO project of the Max Planck Institute for History of Science in Berlin (http://echo.mpiwg-berlin.mpg.de/content/modernphysics/jnul).

The third particularly important collection of documents in the Mathematiker-Archiv consists of an extensive set of letters posted to Adolf Hurwitz before his death in 1919. Hurwitz was not only Klein's star pupil but he also exerted a strong influence on Hilbert during the latter's student days in Königsberg. The published correspondence between Hilbert and Klein (Hilbert/Klein 1985), along with the letters from Hurwitz to Klein and to Hilbert preserved in their respective Nachlässe, brings together a rich set of material that throws much light on the mutual relations between these three figures.

Alongside such famous names, a mention should be made of one of several nearly forgotten figures from this era, Conrad Müller, who worked closely for several years with Klein. Müller's dissertation dealt with the mathematics curriculum in Göttingen during the pre-Gaussian years. He afterwards worked as a librarian in Göttingen until 1910, when he was appointed to a professorship in Hanover. As a student in Göttingen, Müller learned to read Sanskrit. He later exploited that skill in order to study early Indian mathematics, about which he published several articles. Famous for his colossal memory, he also played an invaluable role in supporting Klein's work on one of the era's massive undertakings, the German Encyclopedia of the Mathematical Sciences, which was only completed in 1935.

Unlike Gauss and Riemann, Klein was in the somewhat more enviable position of having the time and resources to prepare his own collected works, which were published in three volumes by Springer, one per year (Klein 1921–23). By then, he was old and ailing, so he was unable to revise his historical wartime lectures. Courant delegated that task to Neugebauer and Stephan Cohn-Vossen and then published these edited versions in his yellow series (Klein 1926, 1927). Courant also gained funding from the Göttingen Academy so that Bessel-Hagen could order Klein's scientific and personal papers. These today form the Klein Nachlass at the SUB, a true goldmine for the history of mathematics from 1870 to 1925 (the year of his death). The larger part of Klein's personal library was soon thereafter sold to Hebrew University, an arrangement that was probably facilitated by Edmund Landau.

After the First World War, Courant assumed Klein's former chair as well as his unofficial position as the head of operations in mathematics. As a Göttingen product, he was naturally deferential toward his former mentors and no one did more to uphold Hilbert's name and reputation throughout the 1920s. Like many others, he failed to recognise the enormity of what Hitler's ascent to power in 1933 meant for the future of Germany. It took Courant some time to realise that the Nazi Government had no interest in supporting mathematicians and scientists – no matter how patriotic they might be – if their political orientation and racial background made them misfits for the new order. After the removal of "Jewish influences" and the dissolution of the Göttingen Institute under his regime, Courant reluctantly took a position at New York University. There, he began building what was at first largely an exile community but which eventually became one of the leading mathematical centres in the United States (Reid 1976).

After the war, Courant regularly visited Göttingen, where his former protégé, Franz Rellich, headed the institute. Courant also kept a watchful eye on Hilbert's

papers, which were only transferred to the university library in 1967. Whereas Klein's Nachlass covers more territory, Hilbert's papers provide invaluable insights into his research and teaching activities. Knowing this, Courant kept some of the letters from it in Rellich's home, where several still remained even after the rather late transfer of the Nachlass to the SUB. Thus, for many years, the original letters and postcards Einstein sent to Hilbert in November 1915 were missing from the Hilbert Nachlass at the SUB. These concern one of the most important chapters in the early history of general relativity and though photocopies of the extant writings were available, no one knew the whereabouts of the originals. In fact, they only turned up about a decade ago when these and other documents were discovered in the attic of Rellich's home. These and other documents originally in the Hilbert Nachlass have since been acquired by the SUB and are available for study in the Department of Special Collections.

The circumstances that surrounded the temporary disappearance of the Einstein writings from 1915 were surely related to Courant's ongoing interest in preserving important sources related to Hilbert's life. During the late 1960s, he was cooperating with Constance Reid, who was then working on her biography of Hilbert (Reid 1970). After completing that project, she was assisted by Courant's friend and former collaborator, K.O. Friedrichs, who asked her to write a book about Courant's life (Reid 1976). For both books, Reid interviewed many mathematicians associated with Göttingen. Transcripts and tapes from these interviews, along with other documentary material from Reid's posthumous papers, were recently acquired by the SUB and have now been catalogued and so await future study.

The 1970s and 1980s saw a fresh outburst of interest in the history of modern mathematics, in particular with regard to foundational research. Two pioneering figures in this regard were Richard Dedekind and Georg Cantor. A substantial collection from Dedekind's scientific papers and correspondence was obtained by the SUB from the family in 1931. In addition to these, in 1966, Ludwig Bieberbach donated a set of five supplementary manuscripts in Dedekind's hand. It was not until 1982, however, that the Nachlass was put in good order by Winfried Scharlau. In the meantime, the SUB had acquired a portion of what remained of Cantor's Nachlass, a resource soon thereafter exploited by several historians of mathematics. Interest in the work and influence of Cantor and Dedekind will surely remain strong for a long time to come. Unfortunately, however, most of Cantor's Nachlass was lost under circumstances that are no longer clear. After his death in 1918, most of Cantor's papers remained in his home in Halle and though they apparently survived the Second World War, they disappeared soon thereafter.

At first it seemed that the same fate had befallen the famous letters Cantor wrote to Dedekind during the 1870s and 1880s, parts of which had been published in 1937 in a booklet prepared by Emmy Noether and Jean Cavaillès (Cantor/Dedekind 1937). Noether had co-edited Dedekind's *Werke* (Dedekind 1930–32) in the early 1930s but soon thereafter lost her position in Göttingen. Like Courant, she fell victim to the very first wave of dismissals after the Nazis gained power. Soon thereafter, she gained an appointment at Bryn Mawr College outside Philadelphia but, in 1935, died unexpectedly from complications following an operation. In 1968, Clark Kimberling was researching her life, in the course of which he received a surprising letter from a retired attorney in Philadelphia, who happened to have been involved in the handling of Noether's estate after her death. His firm had been unable to locate the rightful owners of a large collection of older letters found in her possession at that time and so these documents were eventually shelved away and simply forgotten. When Kimberling opened the package containing these letters, he soon realised that he had struck gold.

This fortunate turn of events led not only to the recovery of Cantor's letters to Dedekind but also to the discovery of a large number of letters that Dedekind had received from Heinrich Weber and Georg Frobenius. This collection was first transcribed by Walter Kaufmann-Bühler and then later by Ralf Haubrich. The latter transcription circulated for some time in various hands but to date these letters have not been published. Nevertheless, Haubrich's transcription was carefully studied by Thomas Hawkins, who used these letters as a crucially important source for his groundbreaking study, *The Mathematics of Frobenius in Context: A Journey through 18th to 20th Century Mathematics* (Hawkins 2013). The correspondence between Dedekind and Weber, on the other hand, was published in a volume that appeared just last year (Scheel 2015). Documentation relating to the recovery of these documents can be found in the Kimberling papers, one of the smaller Nachlässe available at the SUB.

Several of the most recent acquisitions in the expanded collection housed in the Göttingen library relate to the era of National Socialism and the post-war period (Siegmund-Schultze 2009). Here we should recall that Hilbert retired from his professorship in 1930, just about the time that the new institute building was opened; for information on Courant's role in creating the new institute, see (Siegmund-Schultze 2001). He was succeeded by Hermann Weyl, who quickly sought refuge at the Institute for Advanced Study in Princeton after the Nazi takeover. A year later, Helmut Hasse was appointed in his place and he remained head of the Göttingen Institute throughout the Nazi period (Schappacher 1987). Although he was a close friend of Emmy Noether and other Jewish mathematicians, Hasse clearly sympathised with many of the goals of the NS-government. His political views were decidedly nationalistic, enough so that he could curry favour with officials of the new regime. After his death in 1979, his papers fell into the possession of the Göttingen algebraist Martin Kneser, who had married Hasse's daughter Jutta. Kneser then donated the main part of Hasse's extensive Nachlass to the SUB in 1980. Since then, it has been supplemented by further materials but the Hasse

papers have yet to receive close scrutiny by historians of the NS period.

Martin Kneser took a serious interest in the history of mathematics and he encouraged younger people who were interested in the field. Kneser was no doubt partly influenced by his own personal experiences. Not only was he the son-in-law of Helmut Hasse but he was also the son of a distinguished mathematician, Helmuth Kneser, and the grandson of another, Adolf Kneser. All three made important contributions to quite different fields of mathematics. The eldest Kneser, to whom his grandson bore a striking physical resemblance, was best known for his work on the calculus of variations. He also wrote a very interesting historical account of the principle of least action, *Das Prinzip der kleinsten Wirkung von Leibniz bis zur Gegenwart* (1928), an important source for (Schramm 1985).

Helmuth Kneser, who taught in Tübingen after 1937, was, like his father, a very versatile mathematician. He did important work in topology, which included his discovery that Max Dehn's original argument for Dehn's lemma was inadequate. His son later speculated that this roadblock may well have played a role in his father's decision to take up other areas of mathematics after 1930. Martin Kneser took his doctorate in Berlin in 1950 under Erhard Schmidt, one of Hilbert's most distinguished pupils. The youngest Kneser's most important research was in algebra, particularly the theory of quadratic forms. In 1963, he was appointed to a professorship in Göttingen, where he remained till his retirement in 1993. Martin Kneser died in 2004 but he saw to it that all three Nachlässe, his own and those of his father and grandfather, found their place in the Central Archive for German Mathematics Bequests at the SUB.

For the immediate post-war period, the Nachlass of Franz Rellich surely deserves close scrutiny. These papers contain 38 letters from Courant to Rellich, written between 1945 and 1955 (the year of Rellich's death). He was then only 49 years of age. An Austrian by birth, Rellich was one of Courant's close protégés during the early 1930s. After 1933, he lost his position in Göttingen but eventually found a job in Dresden. In 1946, he returned to Göttingen, where he was appointed head of the institute. Courant held out high hopes that he and Rellich would be able to form a new Göttingen-NYU alliance in the future, particularly after Siegel rejoined the Göttingen faculty in 1951. Siegel officially retired in 1961 but continued to teach afterward. A portion of his Nachlass is also available in the collection at the SUB. After 1955, Courant's ties with Göttingen gradually weakened, even though he remained in close contact with Brigitte Rellich, Franz's widow. He had the greatest admiration for Siegel but rightly regarded him as strictly a pure mathematician in the mould of Hilbert. In his obituary for Rellich (Courant 1957), Courant repeated his familiar warning that mathematicians in general needed to reorient their research toward applications in the sciences.

These brief remarks obviously only scratch the surface of a very large subject. Hopefully they at least give a small idea of the rich resource materials held in the SUB's Department of Special Collections. Since I have not even mentioned several important Nachlässe in Göttingen, interested readers should consult the partial list compiled in the appendix below. A full list can be found by going to the webpage of the Central Archive for German Mathematics Bequests, which is linked with the Göttingen archive. Appointments are needed to order materials from the Department of Special Collections so it is always advisable to make these arrangements beforehand. Speaking from personal experience from over many years, this institution offers a most pleasant working atmosphere, supported by very helpful and friendly staff. Serious archival research, on the other hand, requires much time and patience, which are scarce commodities in today's world. Thankfully, plans are afoot to digitise some of the archival holdings in the Nachlässe at the SUB. One can only hope this will be possible so that future researchers can find it easier to explore this vast collection of documentary material, which will surely bring new insights for the history of mathematics.

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See also the paper "Elliptic Functions According to Eisenstein and Kronecker: An Update. Newly found notes of lectures by Kronecker" by Pierre Charollois and Robert Sczech in this Newsletter, pp 8–14.

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Appendix
A Partial List of Nachlässe in the SUIB

Artin, Emil [1898–1962]
Bernstein, Felix [1878–1956]
Bieberbach, Ludwig [1886–1982]
Brauer, Richard [1901–1977]
Cantor, Georg [1845–1918]
Dedekind, Richard [1831–1916]
Gaier, Dieter [1928–2002]
Gauß, Carl Friedrich [1777–1855]
Gerardy, Theo [1908–1986]
Grötzsch, Herbert [1902–1993]
Hasse, Helmut [1898–1979]
Hecke, Erich [1887–1947]
Heegner, Kurt [1893–1965]
Herglotz, Gustav [1881–1953]
Hilbert, David [1862–1943]
Hölder, Ernst [1901–1990]
Hurwitz, Adolf [1859–1919]
Kästner, Abraham Gotthelf [1719–1800]
Kimberling, Clark [1942–]
Klein, Felix [1849–1925]
Kneser, Adolf [1862–1930]
Kneser, Hellmuth [1898–1973]
Kneser, Martin [1928–2004]
Koenigsberger, Leo [1837–1921]
König, Robert [1885–1979]
Köthe, Gottfried [1905–1989]
Maaß, Hans [1911–1992]
Mayer, Tobias [1723–1762]
Minkowski, Hermann [1864–1909]
Neumann, Ernst Richard [1875–1955]
Neumann, Carl Gottfried [1832–1925]
Pickert, Günther [1917–2015]
Reid, Constance [1918–2010]
Rellich, Franz [1906–1955]
Riemann, Bernhard [1826–1866]
Schering, Ernst [1833–1897]
Schering, Karl [1854–1925]
Schwarzschild, Karl [1873–1916]
Siegel, Carl Ludwig [1896–1981]
Staudt, Carl Georg Christian von [1798–1867]
Steinitz, Ernst [1871–1928]
Targonski, György [1928–1998]
Wielandt, Helmut [1910–1979]
Zassenhaus, Hans [1912–1991]