1. Record Nr. UNINA9910582201003321 Autore Wiederrecht Sebastian Titolo Matching minors in bipartite graphs Berlin, : Universitätsverlag der Technischen Universität Berlin, 2022 Pubbl/distr/stampa **ISBN** 3-7983-3253-3 Descrizione fisica 1 electronic resource (476 p.) Collana Foundations of computing Soggetti Algorithms & data structures Lingua di pubblicazione Inglese **Formato** Materiale a stampa Livello bibliografico Monografia Sommario/riassunto In this thesis we adapt fundamental parts of the Graph Minors series of Robertson and Seymour for the study of matching minors and investigate a connection to the study of directed graphs. We develope matching theoretic to established results of graph minor theory: We characterise the existence of a cross over a conformal cycle by means of a topological property. Furthermore, we develope a theory for perfect matching width, a width parameter for graphs with perfect matchings introduced by Norin. here we show that the disjoint alternating paths problem can be solved in polynomial time on graphs of bounded width. Moreover, we show that every bipartite graph with high perfect matching width must contain a large grid as a matching minor. Finally, we prove an analogue of the we known Flat Wall theorem and provide a qualitative description of all bipartite graphs which

exclude a fixed matching minor.