

1037-05-294

Xujin Chen* (xchen@amss.ac.cn), **Gouli Ding** and **Wenan Zang**. *An Excluded Minor Characterization of Box-Mengerian Matroid Ports.*

Let M be a matroid on $E \cup \{\ell\}$, where $\ell \notin E$ is a distinguished element of M . The ℓ -port of M is the set $\mathcal{P} = \{P : P \subseteq E \text{ with } P \cup \{\ell\} \text{ a circuit of } M\}$. Let A be the \mathcal{P} - E incidence matrix. Let $U_{2,4}$ be the uniform matroid on four elements of rank two, F_7 be the Fano matroid, F_7^* be the dual of F_7 , and F_7^+ be the unique series extension of F_7 . We show that the system $A\mathbf{x} \geq \mathbf{1}, \mathbf{x} \geq \mathbf{0}$ is *box-totally dual integral* (box-TDI) if and only if M has no $U_{2,4}$ -minor using ℓ , no F_7^* -minor using ℓ , and no F_7^+ -minor using ℓ as a series element. Several applications of our result is also presented. (Received February 04, 2008)