

Loewner's theorem for maps on operator domains

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The classical Loewner's theorem states that operator monotone functions on real intervals are described by holomorphic functions on the upper half-plane. We prove an analogue where real intervals are replaced by operator domains, operator monotone functions by local order isomorphisms, and upper half-plane by the set of all bounded operators whose imaginary part is a positive invertible operator. We will present several results on local order isomorphisms and pay a special attention to the finite-dimensional case. This is a report on a joint work with Michiya Mori.