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TRANSFORMS ON OPERATOR MONOTONE FUNCTIONS

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Abstract. Let f be an operator monotone function on $[0,\infty)$ with $f(t) \geq 0$ and $f(1) = 1$. If $f(t)$ is neither the constant function 1 nor the identity function t, then

$$h(t) = \frac{(t-a)(t-b)}{(f(t)-f(a))(f^\sharp(t)-f^\sharp(b))} \qquad t \geq 0$$

is also operator monotone on $[0,\infty)$, where $a, b \geq 0$ and

$$f^\sharp(t) = \frac{t}{f(t)} \qquad t \geq 0.$$

Moreover, we show some extensions of this statement.

Key words and phrases. operator monotone functions, Pick functions, Petz-Hasegawa's functions.