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**Title:** Schall- und Brechungsfronten an ebenen Kurven

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In applied acoustic or optics the following problem is very important: Given a plane curve $c$, a sound resp. light point $S$ and a time component $L_0$. If every sonic or light ray is reflected or refracted on $c$ in such a way, that holds $\overline{SP} + \overline{PY_1} = L_0$ ($P$ is a point of $c$) resp. $\overline{SP} + \overline{PY_2} = L_0$, the set of points $Y_1$ resp. $Y_2$ define a curve $\tilde{c}_1$ resp. $\tilde{c}_2$, called the reflective curve (sonic wave front) resp. the refractive curve of $c$ with respect to the centre $S$ an the time component $L_0$. At first we derive parametric representations of $\tilde{c}_1$ resp. $\tilde{c}_2$ in connection with the first and second central curve $k_1$ resp. $k_2$. We show that $k_2$ is the counter-point curve of the point $S$ with regard to the evolute $c^*$ of $c$. We investigate the corresponding catacaustic $h$ and give a geometrical construction of the contact point of $h$ with the reflected ray, if the point $S$ and the pedal curve with regard to the reflected rays are known. Furthermore we give a kinematical generation of the refractive curves $\tilde{c}_2$, using the second central curve $k_2$ and the catacaustic $h$. Finally we investigate – as an application – the special cases, if $c$ is a straight line (in this case the curves $\tilde{c}_2$ are conchoids of NIKOMEDES) or a circle (in this case the curves $\tilde{c}_2$ are rather complicated, the catacaustic $h$ is the evolute of a PASCAL limacon).

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