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ANOTHER APPROACH TO CONSTRUCTION OF REFLECTIONS IN A CYLINDRICAL MIRRORS

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This work presents an alternative approach to construction of reflections in mirrors being side surface of rotational cylinder. A “classic” construction, which is based on the search for points of reflections according to the law of equal angles of incidence and reflectance is highly complicated, time-consuming and non-intuitive. For these reasons it is hardly a good choice for manual drawing work.

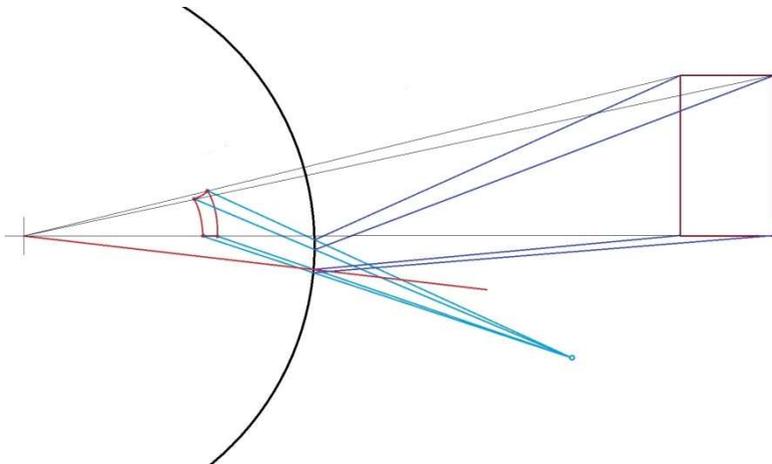


Fig. 1: An illustration shows a cylindrical mirror, an rectangle object, its image in the mirror and rays of light running to the observer’s eye.

As a kind of supplementary construction, author would like to propose an alternative construction, which is much faster, but there are some limitation of its application. This construction – still based on the law of reflection – has a rough character and produce good results under some additional conditions. This construction is based on the search for the apparent image in the

cylindrical mirror of an real object, in a similar way this would be done for flat mirrors. This method is deeply based in geometrical optics, so spherical aberration as a flow in optical devices will be an issue. An observer watches the apparent image, what leads to point of reflection on the surface of cylinder. This method produce acceptable results for mirrors where the radius of the mirror is much larger than the size of an object and when the angle defined by an observer, axis of the cylinder and centre of the objects is small, not exceeding some 20 degrees.