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”Buddha’s light” of cumulative particles

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We show analytically that in the cumulative particles production off
nuclei multiple interactions lead to a glory-like backward focusing effect. Employing
the small phase space method we arrived at a characteristic angular dependence of the production cross section $d\sigma \sim 1/\sqrt{\pi - \theta}$ near the strictly backward direction. This effect takes place for any number $n \geq 3$ of interactions of rescattered particle, either elastic or inelastic (with resonance excitations in
intermediate states), when the final particle is produced near corresponding kinematical boundary.
In the final angles interval including the value $\theta = \pi$ the angular dependence of the cumulative production cross section can have the crater-like (or funnel-like) form.
Such a behaviour of the cross section near the backward direction is in qualitative agreement with some of available data.

Author: Prof. KOPELIOVICH, Vladimir (Institute for Nuclear Research of RAS)

Co-authors: Dr MATUSHKO, Galina (Institute for Nuclear Research of RAS); POTASHNIKOVA, Irina (UTFSM)

Presenter: Prof. KOPELIOVICH, Vladimir (Institute for Nuclear Research of RAS)

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