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Serge Tabachnikov* (tabachni@math.psu.edu). *Tire tracks geometry and bicycle kinematics.*

This talk concerns a simple model of bicycle motion: a bicycle is a segment of fixed length that can move so that the velocity of the rear end is always aligned with the segment. The rear wheel track and a choice of direction determine the front wheel track; changing the direction to the opposite, yields another front track. The two front tracks are related by the Backlund-Darboux transformation which defines a discrete time dynamical system on the space of curves. This system is completely integrable and closely related with a well studied completely integrable continuous time dynamical system, the filament (or binormal, or smoke ring) equation. (Received September 11, 2012)