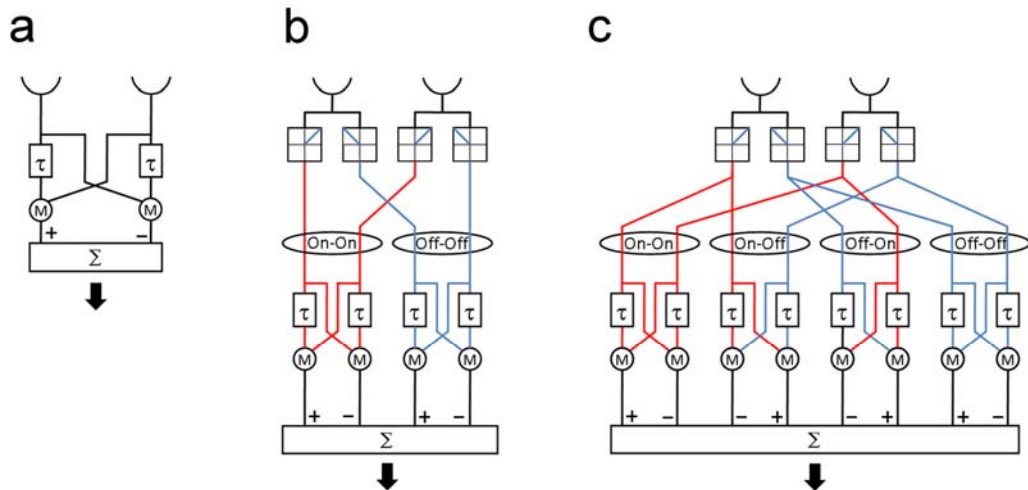


Supplementary Online Material
Visualizing Retinotopic Half-Wave Rectified Input to the Motion Detection Circuitry
of *Drosophila*.

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Supplementary Figure 1. Block diagram of the original Hassenstein-Reichardt-Model¹² (HRM) of visual motion detection and two variants that involve half-wave rectification of the light stimulus. **(a)** Basic HRM as originally derived from an input-output analysis of optomotor behaviour¹². The basic computational steps are: (1) detection of local changes in luminance by two input lines, both signaling brightness increments as well as decrements, (2) temporal delay of one of the two input signals (asymmetrical temporal filtering), (3) multiplication of the temporally delayed and the instantaneous signal of two neighbouring locations, (4) subtraction of the signals of the two half-detectors tuned to opposite preferred direction. **(b)** HRM variant as suggested by Franceschini and colleagues^{22,23} with separate channels for the processing of positive and negative input signals. Half-wave rectification of the input signals and their wiring results in distinct ON-detectors and OFF-detectors. There are no interactions between positive and negative input signals. **(c)** HRM variant inspired by the “Four-Quadrant-Multiplier”¹² employed for the sign-correct multiplication of bipolar input signals in analog signal processing. Half-wave rectification and sorting of the input signals underlies four separate detectors for the detection of moving stimuli with all possible polarities (ON-ON, OFF-OFF, ON-OFF, OFF-ON). In contrast to the previous model, terms with mixed sign are not eliminated. The summed output of this model is mathematically identical to the model in (a).