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**Theory of photoinduced Floquet Weyl semimetal phases** XIAO-XIAO ZHANG, Univ. of Tokyo, TZE TZEN ONG, NAOTO NAGAOSA, Univ. of Tokyo & RIKEN CEMS — Weyl semimetal exhibits various interesting physical phenomena because of the Weyl points, i.e., linear band-crossings. We show by Floquet theory that a linearly polarized light applied to a band insulator can induce controllable Weyl points. In a tight-binding model, we classify different types of photoinduced Weyl points that lead to a rich phase diagram characterized by the Chern number defined on each momentum slices of the bulk states. Taking into account the nonequilibrium electron distribution, we calculate and explain the non-monotonous anomalous Hall conductivity in terms of the light frequency controlled shift of Weyl points' position, which also allows us to examine the conductivity's dependence on the driving electric field.

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