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【118】 Temporal solitons from a ring quantum cascade laser

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By engineering the dispersion of the cavity, we observe the formation of bright dissipative Kerr solitons in the mid-infrared range. The soliton formation appears after an abrupt symmetry breaking between the two lasing directions of the ring cavity. The pump field of the soliton is generated by direct electrical driving and closely resembles the soliton Cherenkov radiation observed in passive microcombs. Two independent techniques shed light on the temporal waveform of the solitons and confirm a pulse width of approximately 3 ps. Our results extend the spectral range of soliton microcombs to mid-infrared wavelengths and will lead to integrated, battery driven and turnkey spectrometers in the molecular fingerprint region.

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