Supplementary Information
Revealing Fano Combs in Directional Mie Scattering

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Supplementary Video

The video shows the potential wells, V_ℓ, and their energy levels for a water sphere with increasing radius, a. To the left of the radius, a blue shaded background marks the inside of the droplet, and to the right the white background marks the surrounding air. An energy level in this quantum analogy represents the energy, k^2, of the laser that would produce a Mie resonance. A resonance occurs when one of the energy levels of the well matches the energy of the laser, marked with a grey dot-dashed line. Note that this is opposite to the experiment where the sphere shrinks.

Each potential is defined as:

$$V_\ell(r) = \begin{cases} -k^2(n^2-1) + \frac{\ell(\ell+1)}{r^2} & r \leq a \\ \frac{\ell(\ell+1)}{r^2} & r > a \end{cases}$$

The ℓ_{min} and ℓ_{max} values are those where the laser's energy falls within the wedges formed for a given radius. The colors of the energy levels are the same as those shown on the combs in Figures 2 and 3. During the first 15 seconds the passage of the levels of the first comb is shown and then the speed is increased (x4) until almost the beginning of the second comb, sec 20. When the energy levels pass in the vicinity of the laser level they change from a dashed line to a solid line. From seconds 20 to 40, the mixture of the first and second comb is shown, causing their respective levels to be interspersed. At the same time, the potential barrier for the levels with $\ell^{(1)}$ becomes wider causing its intensity to decrease, while for those of the second comb with $\ell^{(2)}$ the potential barrier is narrower so that these resonances begin to dominate, as shown in Figure 2. From seconds 40 to 45, the speed is increased (x4) until almost the beginning of the third comb. Subsequently, a similar behavior occurs between the second and third comb, since the levels of the first comb have a much lower intensity. Selected frames of this video are shown together in Figure 3.