

Abstract Submitted  
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**Phase Space Engineering in Optical Microcavities II. Controlling the far field**<sup>1</sup> J. POIRIER, G. PAINCHAUD-APRIL, D. GAGNON, L.J. DUBÉ, Laval University, Quebec (Canada) — Optical microcavities support Whispering Gallery Modes (WGMs) with a very high quality factor  $Q$ . However, WGMs typically display a far-field isotropic emission profile and modifying this far-field profile without spoiling the associated high  $Q$  remains a challenge. Using a 2D annular cavity, we present a procedure capable to achieve these two apparently conflicting goals. With the correspondence between the classical and the wave picture, properties of the classical phase space shed some light on the characteristics of the wave dynamics. Specifically, the *annular cavity* has a well separated *mixed* phase space, a characteristic that proves to be of crucial importance in the emission properties of WGMs. While the onset of directionality in the far-field may be achieved through parametric deformation, the distance cavity-hole centers,  $d$  (see Painchaud-April *et al.* at this Conference), this contribution presents a method to control the emission profile via a second parameter, the hole radius  $r_0$ . The influence of the classical dynamics to *control and predict* the field emission will be demonstrated.

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