Conclusion

In this thesis, we have investigated the possibility of using the Gouy phase to bring out the tuning capability. This is suggested here for the first time. The case of a single lens in a ring cavity has been used to compare the Gaussian mode optics with geometric optics - as is shown in chapter-3. A systematic way of increasing the Gouy phase accumulation is presented. The variability of Gouy phase for a stable branch is turning out to be $0 - \pi$. Accumulated Gouy phase is the phase a wavefront acquires in a sequence of transformations involving lenses and propagations and it is given on the basis of the Gaussian mode. The numerical results which are presented in the thesis are verified with the analytical solutions. Finally, the concept of structured point at various limits of $z_0$ is discussed and it is concluded that the Rayleigh range can be considered as the expanded picture of a point focus of geometrical optics.