

Abstract Submitted  
for the MAR17 Meeting of  
The American Physical Society

**Cherenkov radiation in cholesteric induced by slow charged particles.** JUAN ADRIAN REYES, Instituto de Fisica, UNAM, JORGE-V FONSECA, Facultad de Ciencias, UNAM, CARLOS ALBERTO VELAZQUEZ, Instituto de Fisica, UNAM — We have elaborated a model for calculating the radiated energy spectrum of a charged traveling particle in a cholesteric liquid crystal at constant velocity. For this purpose we have evaluated the polarization of the cholesteric induced by traveling charged particle which can be expressed in terms of the electric field of the particle moving within the cholesteric. We have established Maxwell equations governing the mentioned field in the reciprocal space and solve them in the small birefringence approximation. We have shown that there exists radiation for any particle speed value and have calculated the radiated energy for hypoluminic particle velocities. We have calculated the spectrum for which radiation is emitted in terms of the speed particle and the traveling particle angle and obtain also the distribution of energy radiated versus frequency, emission angle, particle speed angle and particle traveling angle with respect to the cholesteric helix.

Jorge-V Fonseca  
Facultad de Ciencias, UNAM

Date submitted: 11 Nov 2016

Electronic form version 1.4