Decoherence of Displaced Beam with Binomial Amplitude Distribution, S. KOSCIELNIAK, H. TRAN, TRIUMF, Vancouver, Canada - Decoherence, due to a spread of oscillation frequencies, has the effect of "washing out" any undriven collective motion, such as might occur by displacing the beam centroid. When the frequency spread arises from amplitude dependence of tune, one must damp the beam (by feedback) well before decoherence is completed, so as to preserve emittance. By means of the Vlasov equation, in action-angle (J,θ) co-ordinates, we calculate the evolution of the transverse centroid of a particle distribution which, before displacement, has the binomial form $\psi(J) = (1-J/J_0)^{\alpha}$. The spread of betatron angular frequency, ω_β, is modelled by a linear dependence on the action as bJ, where b is the strength of an octupole-like force arising from, say, image charge and the chromaticity is assumed to be zero. For free oscillations, the amplitude remains constant and the evolution of the distribution is completely determined by the retarded angle, $\theta - \omega_\beta t - bJt$. Only the dipole moment of the off-set distribution is required in performing the ensemble averaging for the beam centroid. The amplitude of the centroid oscillation is found to decay inversely with time t to leading order, as $(bt)^{-1}$ for a distribution with $\alpha = 1$, and as $(bt)^2$ for $\alpha = 2, 3$.