1015-53-32   **Ramesh Sharma*** (`rsharma@newhaven.edu`), Department of Mathematics, University Of New Haven, West Haven, CT 06516. *A contact conformal characterization of the odd dimensional unit sphere and related results.* Preliminary report.

Goldberg conjecture says that a compact Einstein almost Kaehler manifold is Kaehler. Intrigued by this, Boyer and Galicki proved that a compact Einstein K-contact manifold is Sasakian. A contact metric manifold $M(\eta, g)$ is said to be η-Einstein if $Ric = \alpha g + \beta \eta \otimes \eta$ for smooth functions α, β on M. Boyer and Galicki proved that a compact η-Einstein K-contact manifold with $\alpha > -2$ is Sasakian. We show that the above two results are valid even if we weaken the assumption of compactness to completeness. Next we define a contact conformal vector field V on a contact metric manifold M by $\nabla_X V = aX + b\varphi X$ for smooth functions a, b on M. An example of such a vector field is ξ on a K-contact vector field for which $\nabla_X \xi = -\varphi X$. We obtain the following characterization of a unit sphere as the following result: Among all complete simply connected K-contact manifolds only the unit sphere admits a non-Killing contact conformal vector field (in particular, a closed conformal vector field). Finally we provide a classification of a (k, μ) contact manifold admitting a contact conformal vector field. (Received January 04, 2006)