On-body Propagation via Creeping Wave

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Abstract:

Communication over body surface by mean of creeping wave for Body Area Network (BAN) is presented in this technical document. When the boundary to be curved, as in the case of propagation around a human body, the curvature of the surface leads to diffraction effects, yielding propagation over the surface of body as creeping wave. The produce of creeping wave can be considered as the longitudinal wave over body surface. The spread speed of creeping wave is equal to that of longitudinal wave. Therefore, the energy exchanger that primary angle is equal to the first critical angle can produce creeping wave, that is to say, theoretically creeping wave is parallel to the longitudinal wave which spreads on surface. Knowledge of the creeping wave behaviour is essential to the optimization of on-body wireless body area network devices, whether the purpose is to minimize their effects or to take advantage of their existence.