Optimal Sensing Period for the Cognitive Radio Networks

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Abstract—The PHY-layer sensing, as a key component of spectrum sensing in cognitive radio, concerns the sensing mechanism to determine when to sense channel for detection and which channel to access. One of the important issues in the PHY-layer sensing control is to find an available sensing period and trade-off between spectrum sensing and data transmission. The larger sensing time leads to higher sensing accuracy, less interference but shorter transmission time. Oppositely if we want hold much more transmission time, the sensing time should be decreased, and the interference to primary user will increase. In this paper, we show the relationship between spectrum sensing and data transmission according to the sensing period. We analyze and propose the new scheme to evaluate optimal sensing period.

Keywords — Cognitive radio, PHY-layer sensing, sensing control, In-band-sensing, optimal sensing period