1126-05-78   **Geir Agnarsson*** (`math.geir@gmail.com`), George Mason University, 4400 University Drive, MS: 3F2, Fairfax, VA 22030. *On the rooted-subtree problem and the Game-Over Attack Strategy.*

Let T be a tree with $n \in \mathbb{N}$ non-root vertices, $p : V(T) \to \mathbb{Q}$ and $c : E(T) \to \mathbb{Q}$ be two weight functions on the vertices and the edges respectively, and $B, G \in \mathbb{Q}^+$ be two fixed numbers. We consider the *Game-Over Attack Strategy (GOAS)* of finding a rooted subtree $T' \subseteq T$ such that $p(T') = \sum_{u \in V(T')} p(u) \geq G$ and $c(T') = \sum_{e \in E(T')} c(e) \leq B$. Although in general this decision problem is NP-complete, there are many special cases that can be solved in polynomial time in n, and these cases can be viewed as models for many security protocols in computer networks. This shows that *hacking into a computer network is computationally easy!* – This is joint work with Ray Greenlaw and Sanpawat Kantrabutra. (Received January 03, 2017)

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