On singular subschemes of hypersurfaces

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The Tjurina ideal of a germ of a holomorphic function f is the ideal of $\mathcal{O}_{\mathbb{C}^n,0}$ - the ring of those germs at $0 \in \mathbb{C}^n$ - generated by f itself and by its partial derivatives. Here it is denoted by $T(f)$. The ideal $T(f)$ gives the structure of closed subscheme of $(\mathbb{C}^n, 0)$ to the singular set of the hypersurface defined by f, being an object of central interest in Singularity Theory. In this talk we introduce *T-fullness* and *T-dependence*, two easily verifiable properties for arbitrary ideals of germs of holomorphic functions. These two properties allow us to give necessary and sufficient conditions on an ideal $I \subset \mathcal{O}_{\mathbb{C}^n,0}$ for the equation $I = T(f)$ to admit a solution f. As a result we characterize closed subschemes of $(\mathbb{C}^n, 0)$ arising as singularities of germs of hypersurfaces.