1128-47-1   **Bo Zhang*** (`bzhang@uncfsu.edu`), Fayetteville State University, Department of Mathematics and Computer Scienc, 1200 Murchison Road, Fayetteville, NC 28301. *Stability by Schauder's Fixed Point Theorem for Nonlinear Delay and Fractional Differential Equations.* Preliminary report.

In this paper we first study a nonlinear scalar differential equation with variable delays

$$x' = -a(t)x^3(t) + b(t)x^3(t - r(t))$$

and give conditions to ensure that the zero solution is asymptotically stable by applying Schauder's Fixed Point Theorem. The paper is motivated by a number difficulties encountered in the study of this equation by means of Liapunov's direct method. We notice that most of these difficulties vanish when applying fixed point theory. While Liapunov's direct method usually asks pointwise conditions on the functions governing the system, the stability results we offer ask conditions of an averaging nature. Stability and asymptotic stability theorems are proved. The same technique is also applied to some nonlinear fractional differential equations of Caputo type with similar right-hand side functions. (Received August 12, 2016)