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Dat Cao*, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409, and **Luan Hoang**, Department of Mathematics and Statistics, Texas Tech University, Lubbock, TX 79409. *Asymptotic expansions for solutions of non-autonomous differential equations.*

We establish the asymptotic expansions, when time goes to infinity, for decaying solutions of non-linear non-autonomous systems of ordinary differential equations. This extends the original work of Foias-Saut for Navier-Stokes equations for potential forces (which deal with a bilinear mapping). In our study, the nonlinearity is more general, and can have an expansion form of any order. We prove that any decaying solution admits an asymptotic expansion, as time tends to infinity, of the same type as the force's. We then briefly discuss the results for Navier-Stokes equations. This is a joint work with Luan Hoang (Texas Tech University). (Received September 19, 2018)