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**Imelda Trejo\*** (imelda.trejo@mavs.uta.edu), 425 S Oak St, Apt 106, Arlington, TX 76010,  
and **Hristo Kojouharov** and **Benito Chen-Charpentier**. *Modeling the Effects of Inflammation  
in Bone Fracture Healing*.

A new mathematical model is presented to study the early inflammatory effects in bone healing. It consists of a system of nonlinear ordinary differential equations that represents the interactions among macrophages, mesenchymal stem cells, and osteoblasts. A qualitative analysis of the model is performed to determine the equilibria and their corresponding stability properties. There are three equilibria which represent the successful healing, nonunion, and dead tissue. A set of numerical simulations is presented to support the theoretical results. The model is also used to numerically monitor the evolution of a broken bone for different types of fractures and to explore possible treatments to accelerate bone healing by administrating anti-inflammatory drugs. (Received September 26, 2017)