1134-35-163 **Marius Ghergu** and **Steven D. Taliaferro*** (stalia@math.tamu.edu), Mathematics Department, Texas A&M University, College Station, TX 77843-3368, and **Igor E. Verbitsky**.

Pointwise Bounds and Blow-up for Systems of Semilinear Elliptic and Parabolic Inequalities.

We discuss the behavior near the origin of positive solutions $u(x)$ and $v(x)$ of the elliptic system

$$\begin{aligned} 0 \le -\Delta u \le v^\lambda \\ 0 \le -\Delta v \le u^\sigma \end{aligned} \qquad \text{in } B_1(0) \setminus \{0\} \subset \mathbb{R}^n,\ n \ge 3, \tag{1}$$

where λ and σ are nonnegative constants.

We also present similar results on the behavior for t small and positive of nonnegative solutions $u(x,t)$ and $v(x,t)$ of the parabolic system

$$\begin{aligned} 0 \le u_t - \Delta u \le v^\lambda \\ 0 \le v_t - \Delta v \le u^\sigma \end{aligned} \qquad \text{in } \Omega \times (0,1), \tag{2}$$

where λ and σ are nonnegative constants and Ω is an open subset of $\mathbb{R}^n$, $n \ge 1$.

The extension of our results for the elliptic system (1) to the parabolic system (2) requires new parabolic versions of Hedbergs inequality, the Hardy-Littlewood-Sobolev inequality, and nonlinear Riesz potential estimates. These new parabolic tools are proved using a modified version of the Hardy-Littlewood maximal function inequality in which Euclidean balls in $\mathbb{R}^n$ are replaced with heat balls in $\mathbb{R}^n \times \mathbb{R}$. (Received September 02, 2017)