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Mathew Gluck* (mrg0019@uah.edu), Shelby Center for Science and Technology, 301 Sparkman Drive, Huntsville, AL 35899. *Classification of Solutions to a Critically Nonlinear System of Elliptic Equations on Euclidean Half-Space.*

For $N \geq 3$ and non-negative real numbers a_{ij} and b_{ij} ($i, j = 1, \dots, m$), the semi-linear elliptic system

$$\begin{cases} \Delta u_i + \prod_{j=1}^m u_j^{a_{ij}} = 0 & \text{in } \mathbb{R}_+^N \\ \frac{\partial u_i}{\partial y_N} = c_i \prod_{j=1}^m u_j^{b_{ij}} & \text{on } \partial\mathbb{R}_+^N \end{cases} \quad i = 1, \dots, m$$

is considered, where \mathbb{R}_+^N is the upper half of N -dimensional Euclidean space. Under suitable assumptions on the exponents a_{ij} and b_{ij} , a classification theorem for the positive $C^2(\mathbb{R}_+^N) \cap C^1(\overline{\mathbb{R}_+^N})$ -solutions of this system is proven. (Received September 15, 2014)