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**Gerry Ladas\*** (geladas@mail.uri.edu), Kingston, RI 02881. *Patterns of boundedness for systems of rational difference equations.*

We present 15 patterns of boundedness which describe the boundedness characterizations of all special cases of the rational system:

$$x_{n+1} = \frac{\alpha_1 + \beta_1 x_n + \gamma_1 y_n}{A_1 + B_1 x_n + C_1 y_n} \quad \text{and} \quad y_{n+1} = \frac{\alpha_2 + \beta_2 x_n + \gamma_2 y_n}{A_2 + B_2 x_n + C_2 y_n}$$

with nonnegative parameters and nonnegative initial conditions.

The patterns have been established in all special cases except for the special case of May's Host-Parasitoid Model which still remains a conjecture.

We also present several thought provoking open problems and conjectures on the global character of solutions of this system and its extensions to higher order spaces.

During the last two years with my collaborators and students we have discovered 15 patterns of boundedness for rational systems in the plane which (with a few conjectures about a small number of special cases) determine the boundedness character of each of the 2401 special cases of rational systems in the plane. These patterns offer a fertile area of research in the global character of solutions of rational difference equations and systems. (Received September 20, 2011)