ON THE PLANAR SYSTEM ARISING IN THE NETWORK CONTROL THEORY

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We consider two-dimensional differential system

$$
\begin{cases}
\dfrac{dx_1}{dt} = \dfrac{1}{1 + exp(-\mu(W_{11}x_1 + W_{12}x_2 - \Theta))} - x_1, \\[3mm]
\dfrac{dx_2}{dt} = \dfrac{1}{1 + exp(-\mu(W_{21}x_1 + W_{22}x_2 - \Theta))} - x_2,
\end{cases}
\tag{1}
$$

where W_{ij} may take values $-1, 0$ or 1.

We study configurations of critical points and their dependence on parameters μ and Θ. These combinations of critical points are interpreted as attractors. We provide description of attractors. Illustrations and examples are considered also.

REFERENCES

[1] Y. Koizumi, T. Miyamura, S. Arakawa, E. Oki, K. Shiomoto, and M. Murata . Adaptive Virtual Network Topology Control Based on Attractor Selection. *Journal of Lightwave Technology (ISSN : 0733-8724)*, **28** (11):1720–1731, 2010. DOI:10.1109/JLT.2010.2048412