Review Chandragiri PhD Thesis

immediate

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- I have had difficulties reading this dissertation. This difficulty stems from the fact that the author is using notations and terminologies that are not standard in the discipline of difference equations a la the books of Agarwal and Elaydi. The standard notation for an n-dimensional linear systems

$$\mathbf{x}_{n+1} = A\mathbf{x}_n \tag{0.1}$$

  where $A_{n\times n} = (a_{ij})_{n\times n}$ is an $n \times n$ matrix and $\mathbf{x} = (x_1, x_2, \ldots, x_n)^T \in \mathbb{R}^n$.

  or

$$\mathbf{x}_{n+1} = f(x_n, x_{n-1}, \ldots . x_{n-k}) \tag{0.2}$$

- Generating functions are similar and analogous to Z-transform, where both are used linear difference equations of finite and infinite order. In particular they may be used to determine the dynamics and the qualitative behavior of linear systems. A comparison between the generating function and the Z-transforms would be an added value. This is, particularly, important for engineers since they use the Z-transform in the study of control theory.
- What is the connection between generating functions and Laplace Tranform?
- Lack of concrete examples makes it difficult for the reader to understand the significance of the obtained results. The only concrete example that I saw is the example of the Fibonacci recurrence difference equation).
- Notations used for matrices should be in consistence with the linear algebra literature. For instance, the entries of a matrix A should be written as a_{ij}