Some new subclasses of generalized Nevanlinna functions

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Given an arbitrary symmetric rational function r we introduce and study the following subclasses of (generalized) Nevanlinna functions $\mathcal{N}_\kappa$ generated by r:

$$\mathcal{N}_\kappa^{\tilde\kappa}(r) = \{\, Q \in \mathcal{N}_\kappa : rQ \in \mathcal{N}_{\tilde\kappa}, \quad \kappa, \tilde\kappa \in \mathbb{N} \,\}.$$

The canonical factorizations for the functions $Q \in \mathcal{N}_\kappa$ and $rQ \in \mathcal{N}_\kappa^{\tilde\kappa}(r)$ are also established and the connection between the corresponding operator models (realizations) is explained. Various special cases of these subclasses, known in the earlier literature, are indicated.

The talk is based on a joint work with H.L. Wietsma (Vaasa).