

### **“Bias-dependent models of microwave transistors based on PKI artificial neural networks”**

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**Abstract** – Applications of artificial neural networks (ANNs) with additional prior knowledge at its inputs (PKI ANNs) in biasdependent modelling of microwave transistors are proposed in this paper. Here, modelling of microwave FET scattering (S-) and noise parameters is considered. Scattering and noise parameters of a device are modelled by two separate PKI ANNs. The inputs of PKI ANNs are, besides values of bias conditions and frequency, approximate values of the parameters that are modelled. We propose the approximate values of the modelled parameters to be the values obtained by a basic ANN model developed earlier for a device which belongs to the same class as the modelled device. In this way, for the same set of available measured values of the device parameters, the model accuracy increases, as it is illustrated by a modelling example for a specific pHEMT device.