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INTEGRATED DESIGN PROCESS FOR FLEXIBLE ELECTRONICS USING VMAP

Nico Arnold,
TU Dresden/IFTE, Dresden, Germany
Edwin Lamers, Lambert Russcher
Reden, Hengelo, Netherlands
Project HyperStripes Consortium: TU Dresden, Reden, Capical, FhG EMFT, Gdansk Uni, IMS CHIPS, ISS RFID, Integer, IMR, NanoWired, OSYPKA, Philips Healthcare, Salvia, SMG, Signify, TNO, Würth

The EU project HyPerStripes aims to develop long, flexible, and stretchable electronic stripes that can be used to create smart cables, medical implants and transparent dis-plays on many different substrates. To meet the requirements, technologies like roll-to-roll manufacturing and chip embedding are used to facilitate a stable and cost-efficient production and small dimensions.

These stripes are mainly designed using classic PCB programs, with the biggest support being for KiCad. The flat geometries exported from these applications are extruded to create 3D shapes, which are then transformed to bend these designs into their final shape. This is done by a program developed for bending those 3D geometries just like a normal flexible circuit. Based on the data generated by that program, different simulation steps can be carried out to verify the usability of the design for the respective application.

Since many steps are involved in the interdisciplinary design, simulation, evaluation, production and testing, there is a need for a file format that is able to store information about all the process steps involved. The VMAP format is able to fill this gap by offering the possibility of saving datasets, geometries, simulation results and measurement series while providing the option of adding meta information to the data it contains.