

1 **Design, development and feasibility study of a novel concept for modelling of seams in**
2 **garments**

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10 **Abstract**

11 Seams are important elements in apparel construction, together with the material properties
12 contribute to the quality of the apparel. The seam characteristics include: strength, elasticity,
13 durability, safety, and appearance. A lot of effort was put in evaluation of these parameters to
14 quality of seam. With rising importance of numerical modelling as a predictive tool, a
15 modelling of seams and stiches arise too. To our knowledge, only a few scientific work was
16 contributed to this issue. Most of the works try to describe the interaction of suture with the
17 garment by a FE structural model either by a three dimensional or one dimensional finite
18 element models. In general view, if the stitch itself is not an object of the research, these
19 approaches seems clumsy with and useless in use for modelling of large FE models.

20 In modelling point of view, a seam might be considered as a cohesive contact between two
21 fabrics. A cohesive contact is successfully modelled by a FE models by various approaches
22 regarding the type of glue and contacting materials. A novel concept of seam FE modelling is
23 introduced in this given study. The FE seam concept was supposed carry the overall strength
24 of the suture, so that there will be no failure of contacting fabrics. The feasibility and
25 potential limitation of the technology is also discussed.