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## **Virtual Technological Analyses of Neolithic Textiles**

A lot of Neolithic textiles were excavated in Baden-Württemberg. Many of them were found years ago in the Lake Constance at well known archaeological settlements like Hornstaad, Allensbach or Sipplingen. Most of these objects have a very complicated three dimensional structure.

The use of conventional methods to analyse three dimensional objects makes technological examination of the entire structure challenging. Usually, the surface of the objects is examined. There is no possibility to analyse them entirely, leaving additional questions to their structure. In addition these textiles are extremely fragile because many of them were carbonised. This was caused in the Neolithic age when the settlement burned down. The carbonised textiles are very brittle. Frequent handling during an investigation is straining for the find.

3D computed tomography (XCT) is an innovative, accurate and non-destructive technique. By means of the XCT not only the exterior layer but also the interior structure is detected. XCT has become our undisputed standard method for the analysis of archaeological objects. Therefore the XCT seemed to be a very promising technique to investigate the manufacturing technology of the three dimensional Neolithic finds. Moreover because of the obtained digital data it is not necessary to handle the object for analysis. The virtual structure can be turned in every direction without straining the fragile find.

The eligibility of the XCT was assessed by measuring several textiles. For the XCT analyses special moulds were prepared. The digital data was evaluated using the software VGStudio Max<sup>®</sup>. Additionally the finds were documented conventionally. Therefore the finds were drawn and investigated under the microscope. Both digital and conventional analyses were evaluated by comparing the results obtained.

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