Solid Earth

Supplement of

Methods and uncertainty estimations of 3-D structural modelling in crystalline rocks: a case study

Raphael Schneeberger et al.

Correspondence to: Raphael Schneeberger (raphael.schneeberger@geo.unibe.ch)

1 Pseudo-Code: Bentley-Ottmann Algorithm

Initialize event queue **EQ** = all segment endpoints;

Sort **EQ** by increasing x and y;

Initialize sweep line **SL** to be empty;

Initialize output intersection list **IL** to be empty;

While (**EQ** is nonempty) {

   Let E = the next event from **EQ**;

   If (E is a left endpoint) {

      Let segE = E's segment;

      Add segE to **SL**;

      Let segA = the segment Above segE in **SL**;

      Let segB = the segment Below segE in **SL**;

      If (I = Intersect(segE with segA) exists)

         Insert I into **EQ**;

      If (I = Intersect(segE with segB) exists)

         Insert I into **EQ**;

   }

   Else If (E is a right endpoint) {

      Let segE = E's segment;

      Let segA = the segment Above segE in **SL**;

      Let segB = the segment Below segE in **SL**;

      Delete segE from **SL**;

      If (I = Intersect(segA with segB) exists)

         If (I is not in **EQ** already)

            Insert I into **EQ**;

   }

   Else { // E is an intersection event

      Add E's intersect point to the output list **IL**;

      Let segE1 above segE2 be E's intersecting segments in **SL**;

      Swap their positions so that segE2 is now above segE1;

      Let segA = the segment above segE2 in **SL**;

      Let segB = the segment below segE1 in **SL**;

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34              If (I = Intersect(segE2 with segA) exists)
35                 If (I is not in EQ already)
36                    Insert I into EQ;
37              If (I = Intersect(segE1 with segB) exists)
38                 If (I is not in EQ already)
39                    Insert I into EQ;
40           }
41         remove E from EQ;
42      }
43    return IL;
44  }

45
```

3D structural model of the GTS

3D structural model using Delaunay triangulation

3D structural model using field data