QGIS Application - Bug report \#13608
Possible Bug in GEOS when calculating intersection of two polygons with inner rings?
2015-10-15 05:45 AM - Adrian Klink

| Status: | Closed |  |  |
| :--- | :--- | :--- | :--- |
| Priority: | Normal |  |  |
| Assignee: |  |  |  |
| Category: |  | Regression?: | No |
| Affected QGIS version:2.10.1 | Easy fix?: No <br> Operating System: Resolution: <br> Cull Request or Patch supplied: Cixed/implemented <br> Crashes QGIS or corrupls data:  |  |  |

## Description

As far as I understand, GEOS is responsible for calculationg intersections between polygons in QGIS. When I try to intersect two polygons with inner rings (holes), intersection fails. Is this a possible bug in GEOS module in QGIS? Using ArcGIS creates a valid geometry. I have tried using QGIS 2.10 Pisa 64bit Windows 7 and QGIS 2.10 Pisa 32bit Windows 8.1, using Vector -> Intersection via menu and/or Python scripting. Either I get no geometry or invalid GeometryCollection.

Can someone double check, please?

Here are the polygons (as WKT String, can be imported into QGIS via QuickWKT Plugin):

Polygon ((32363196.675240271 5467660.3907237295, 32363272.9612435335467641.608177687, 32363283.202260282 5467556.0808803849 , 32363090.88836604 5467558.0382346781, 32363089.014254488 5467625.9334499743, $32363196.6752402715467660 .3907237295),(32363160.684000000357627875467605 .09290000051259995$, $32363150.18100000172853475467599 .87690000049769878,32363135.589999999850988395467593 .77390000037848949$, 32363124.546999998390674595467587 .28889999911189079 , 32363160.210000000894069675467594.69590000063180923, 32363157.515999998897314075467596 .38389999978244305 , 32363156.73499999940395355 5467598.88590000011026859, $32363158.031999997794628145467602 .30690000019967556,32363160.684000000357627875467605 .09290000051259995)$ )
intersection with:

Polygon ((32363196.675240271 5467660.3907237295, 32363272.9612435335467641.608177687, 32363283.202260282 5467556.0808803849, 32363090.88836604 5467558.0382346781, 32363089.014254488 5467625.9334499743, 32363196.675240271 5467660.3907237295),(32363262.36500000208616257 $5467580.39589999988675117,32363173.828999999910593035467597 .48589999973773956,32363160.21000000089406967$ 5467594.69590000063180923, 32363124.54699999839067459 5467587.28889999911189079, 32363108.69399999982714653 5467581.39589999988675117, 32363262.365000002086162575467580.39589999988675117))

## Associated revisions

Revision 34dc3143-2015-10-15 10:48 PM - Nyall Dawson

Fix exporting geometry collections to WKT

Child types were incorrectly being dropped when the collection
consisted of mixed geometry types (eg line \& polygon) (refs \#13608)

## History

## \#1-2015-10-15 01:27 PM - Jukka Rahkonen

Paste also the result geometry from ArcGIS.

## \#2-2015-10-15 01:51 PM - Nyall Dawson

- Status changed from Open to Feedback

Thanks - that's helped me track down a possibly related bug in geometry collections. Looks like that intersection operation results in a collection of a string and polygon.

Can you please confirm which tool/processing algorithm/menu item you are using to perform the intersection? That will probably need to be updated to handle this case.

## \#3-2015-10-16 01:33 AM - Adrian Klink

## Nyall Dawson wrote:

Thanks - that's helped me track down a possibly related bug in geometry collections. Looks like that intersection operation results in a collection of a string and polygon.

Can you please confirm which tool/processing algorithm/menu item you are using to perform the intersection? That will probably need to be updated to handle this case.

Originally this WKT was taken from a Shapefile. This problem (empty geometry) occured, when using:

QGIS Menu -> Vector -> Geoprocessing Tools -> Intersect

The second approach (resulting in invalid GeometryCollection) was using Python Scripting in QGIS:

```
layer1 = iface.addVectorLayer(first_file, "first_layer", "ogr")
layer2 = iface.addVectorLayer(second_file, "second_layer", "ogr")
iter1 = layer1.getFeatures()
    for feature1 in iter1:
        geom1 = feature1.geometry()
        for feature2 in iter2:
        geom2 = feature2.geometry()
        if geom1.intersects(geom2):
            geomintersect = geom1.intersection(geom2)
            print "%s" % (geomintersect.exportToWkt())
```

Resulting Geometry in ArcGIS is (Polygon only, since input have been 2 polygons and intersecting line of inner rings has no area, thus is no polygon):

Polygon ((32363272.96124353259801865 5467641.60817768704146147, 32363283.20226028189063072 5467556.08088038489222527, $32363090.888366039842367175467558 .03823467809706926,32363089.014254488050937655467625 .93344997335225344$, 32363196.675240270793437965467660 .39072373043745756 , 32363272.96124353259801865 5467641.60817768704146147),(32363108.6939999982714653 5467581.39590000081807375, 32363262.365000000208616257 $5467580.39589999988675117,32363173.828999999910593035467597 .48589999973773956,32363160.21000000089406967$
5467594.69590000063180923, 32363157.51599999889731407 5467596.38389999978244305, 32363156.734999999940395355
5467598.88590000104159117 , $32363158.031999997794628145467602 .30690000019967556,32363160.68400000035762787$
5467605.09289999958127737, 32363150.1810000017285347 5467599.87690000049769878, 32363135.58999999985098839
5467593.77389999944716692 , 32363124.546999998390674595467587.28889999911189079, 32363108.6939999982714653
5467581.39590000081807375))

## \#4-2015-10-16 01:54 AM - Adrian Klink

## Adrian Klink wrote:

Polygon only, since input have been 2 polygons and intersecting line of inner rings has no area, thus is no polygon

Since I mentioned that ArcGIS and QGIS behave different on intersections of polygons (result is polygon only in ArcGIS) there is also a second case (I currently have no example, but I may provide one next week):
Two polygonstouching each other at a line string behave different in QGIS and ArcGIS:

- ArcGIS: no intersection (touching line string has no area - thus no polygon)
- QGIS: intersection resulting in a line string (same behaviour as with above case which was resulting in a GeometryCollection of Polygon and LineString, but this time the outer ring and not the inner rings are affected)


## \#5-2015-12-27 02:37 PM - Giovanni Manghi

- Resolution set to fixed/implemented
- Status changed from Feedback to Closed
this was caused by a change in the qgis code that left several tools in the vector menu "broken" when the result contained a collection, this was fixed recently in qgis master.

