

# Package ‘oaqc’

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**Title** Computation of the Orbit-Aware Quad Census

**Version** 2.0.0

**Maintainer** David Schoch <david@schochastics.net>

**Description** Implements the efficient algorithm by Ortmann and Brandes (2017) <doi:10.1007/s41109-017-0027-2> to compute the orbit-aware frequency distribution of induced and non-induced quads, i.e. subgraphs of size four. Given an edge matrix, data frame, or a graph object (e.g., 'igraph'), the orbit-aware counts are computed respective each of the edges and nodes.

**URL** <https://github.com/schochastics/oaqc>

**BugReports** <https://github.com/schochastics/oaqc/issues>

**Depends** R (>= 3.4)

**Suggests** igraph, knitr, rmarkdown, testthat (>= 3.0.0)

**License** GPL (>= 3)

**Encoding** UTF-8

**NeedsCompilation** yes

**RoxygenNote** 7.3.2

**VignetteBuilder** knitr

**Config/testthat/edition** 3

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**Repository** CRAN

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|-----------------|---|
| annotate_result | <i>Annotates the igraph object with orbit labels.</i> |
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**Description**

Annotates the igraph object with orbit labels.

**Usage**

```
annotate_result(graph, orbits, non_ind_freq)
```

**Arguments**

|              |  |
|--------------|--|
| graph        | Unmodified input graph.  |
| orbits       | List with n_orbits, e_orbits matrices.                                       |
| non_ind_freq | A flag indicating whether non-induced frequencies have to be written or not. |

**Value**

orbits if the input is not an igraph, the annotated igraph instead.

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|              |                            |
|--------------|----------------------------|
| as.edge_list | <i>Coerce graph input.</i> |
|--------------|----------------------------|

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**Description**

Coerce graph input.

**Usage**

```
as.edge_list(graph)
```

**Arguments**

|       |                                       |
|-------|---------------------------------------|
| graph | A matrix, data.frame or graph object. |
|-------|---------------------------------------|

**Value**

Edge list matrix.

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`oaqc`*Orbit-aware Quad Census computation*

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### Description

Implements the efficient algorithm by Ortmann and Brandes (2017) [doi:10.1007/s4110901700272](https://doi.org/10.1007/s4110901700272) to compute the orbit-aware frequency distribution of induced and non-induced quads, i.e. subgraphs of size four. Given an edge matrix, data frame, or a graph object (e.g., 'igraph'), the orbit-aware counts are computed respective each of the edges and nodes.

### Usage

```
oaqc(graph, non_ind_freq = F, file = "")
```

### Arguments

|                           |   |
|---------------------------|---|
| <code>graph</code>        | A matrix, data.frame or graph object.   |
| <code>non_ind_freq</code> | A flag indicating whether non-induced frequencies have to be returned or not. |
| <code>file</code>         | Name (and location) of the file to be written.                                |

### Value

orbit-aware quad census on a node and edge level. Consult `vignette('oaqc')` to see the correspondence between orbit and quad.

### Author(s)

**Maintainer:** David Schoch <david@schochastics.net> ([ORCID](#))

Authors:

- Mark Ortmann
- Felix Schoenenberger

### Examples

```
k4 <- data.frame(
  source = c(0, 0, 0, 1, 1, 2),
  target = c(1, 2, 3, 2, 3, 3)
)

k4orbits <- oaqc(k4, non_ind_freq = TRUE)
print(k4orbits)
```

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