

Polynomial Roots Solver

Port to C++ of Jenkins-Traub real polynomial root finder and the algorithm of Norbert Flocke for polynoms up to degree 4.

Doxygen documentation: <http://ebertolazzi.github.io/quarticRootsFlocke/>

Repository: <https://github.com/ebertolazzi/quarticRootsFlocke>

Usage

```
#include "PolynomialRoots.hh"
....

double coeffs[] = { 8, -8, 16,-16, 8,-8 }; // polynomial coeffs

double zeror[5], zeroi[5];
int    info[5];
int    degree = 5;

int ok = PolynomialRoots::roots( coeffs, degree, zeror, zeroi ); // ok < 0 failed
cout << " ok = " << ok << '\n' ;
for ( int i = 0 ; i < degree ; ++i )
    cout << zeror[i] << " + I* " << zeroi[i] << '\n';
```

To solve quadratic, cubic or quartic use specialized classes

```
Quadratic qsolve(a,b,c);
qsolve.info(cout);

Cubic csolve(a,b,c,d);
csolve.info(cout);

Quartic q4(a,b,c,d,e);
q4.info(cout);
```

look at the class definition to see how to access the computed roots.

References

- Algorithm 954: An Accurate and Efficient Cubic and Quartic Equation Solver for Physical Applications, ACM TOMS, vol 41, n.4, 2015
- A Three-Stage Algorithm for Real Polynomials Using Quadratic Iteration M. A. Jenkins and J. F. Traub

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