1067-11-2326 **Robert Erra*** (erra@esiea.fr), ESIEA, 75005 PARIS, France. *A Bezoutian algorithm for Egyptian Fractions.* Preliminary report.

We present an Egyptian Fraction algorithm, *i.e.* an algorithm that computes, for a fraction p/q, integers $x_1, \dots x_k$ such that:

$$\frac{p}{q} = \frac{1}{x_1} + \frac{1}{x_2} + \dots \frac{1}{x_k}$$

The algorithm relies on the well known property (called Bezout identity in France): integers q and q are coprime if and only if it exists two integers u and v such that $p\,u + q\,v = 1$, and so, we propose to call it the *Bezoutian algorithm.*

This algorithm is simple and fast, it has some interesting properties:

- it computes at most p numbers so $k \leq p$ (as the Bleicher algorithm);
- $x_1 < q^2$;
- $x_1 > x_2 \dots > x_k$.
- for fractions $4/q$ if $q \neq 1 \mod 4$ then $k <= 3$.

If we allow the integers x_i to be negative, the algorithms helps to prove some known results about the Schinzel conjecture: for $a = 2, 3, 4, 5, 6, 7, 8$ then the equation

$$\frac{a}{q} = \frac{1}{x_1} \pm \frac{1}{x_2} \pm \frac{1}{x_3}$$

is always solvable for $q > a$.

Eventually, we present an Odd variant that computes, for a fraction p/q with q odd, odd denominators. The algorithm seems to compute a finite developement but we have no proof. (Received September 22, 2010)