Cryptography Using Chebyshev Polynomials

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Cryptography Using Chebyshev Polynomials

an RSA encryption algorithm based on Chebyshev polynomials. 2 Diffie-Hellman Key Agreement with Cheby-shev polynomials We generalize the Diffie-Hellman key agreement protocol as follows. Instead of generalizing the basic rule of exponents (gm)n = gmn = (gn)m to an arbitrary group, we consider it as a polynomial identity (xm)n = xmn =

Cryptography using Chebyshev polynomials

Cryptography Using Chebyshev Polynomials We consider replacing the monomial xn with the Chebyshev poly-nomial T n(x) in the Diffie-Hellman and RSA cryptography algorithms. We show that we can generalize the binary powering algorithm to com-pute Chebyshev polynomials, and that the inverse problem of com-puting the degree n, the discrete log

Cryptography Using Chebyshev Polynomials - ME

We consider replacing the monomial xn with the Chebyshev poly-nomial Tn(x) in the Diffie-Hellman and RSA cryptography algorithms. We show that we can generalize the binary powering algorithm to com-pute Chebyshev polynomials, and that the inverse problem of com-puting the degree n, the discrete log problem for Tn(x) mod p, is as difficult as that for xn mod p. 1

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Cryptography Using Chebyshev Polynomials

Let n ∈ and x ∈ ; we define Chebyshev polynomial : → as T (x) = . Its semigroup property is as follows: In 2008, Zhang extended to the interval (-∞, +∞). Therefore, we have a different formula of Chebyshev polynomial as follows: where p ∈ , x ∈ and n ∈ℕ. We see that can be changed to. 2.2. The Hard Problems

Improved Chebyshev Polynomials-Based Authentication Scheme ...

Kocarev and Tasev 4 projected a PKC technique using Chebyshev polynomials define over real numbers by supplanting the multiplications in traditional procedures with the reiteration of Chebyshev polynomials characterized on real numbers. Some favorable position is that this procedure improves the contemporary public key family and releases novel directions for research in the area of PKC.

Chebyshev chaotic map-based ID-based cryptographic model ...

IN ASYMMETRIC CRYPTOGRAPHY Abstract Based on Chebyshev polynomials, one can create an asymmetric cryptosystem that allows for secure communication. Such a cryptosystem is based on the fact that these polynomials form a semi-group due to the composition opera-tion. This article presents two new cryptosystems based on modi cations of Chebyshev’s polynomials. The presented analysis shows that their security is

APPLICATION OF MODIFIED CHEBYSHEV POLYNOMIALS IN ...

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Cryptography Using Chebyshev Polynomials
Based on Chebyshev polynomials, you can create an asymmetric cryptosystem that allows secure communication. Such a cryptosystem uses the fact that these polynomials form a semi-group due to the composition operation. This article presents new cryptosystems that use other than semi-group property dependencies. Based on these dependencies as well as modifications of Chebyshev's polynomials, two cryptosystems have been proposed.

The application of modified Chebyshev polynomials in ...
The Chebyshev polynomials are a sequence of orthogonal polynomials that are related to De Moivre's formula. They have numerous properties, which make them useful in areas like solving polynomials and approximating functions. Since we know that ...

Chebyshev Polynomials - Definition and Properties ...
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Cubic Approximation to e^x using Chebyshev Polynomial
sin(3θ)=(4cos2(θ)−1)sin(θ){\displaystyle \sin(3\theta)=(4\cos ^{2}(\theta)-1)\,\sin(\theta)} gives. U2(x) = 4x2− 1 . Once converted to polynomial form, Tn(x)and Un(x)are called Chebyshev polynomials of the firstand second kind, respectively.

Chebyshev polynomials - Wikipedia
We present a novel image encryption algorithm using Chebyshev polynomial based on permutation and substitution and Duffing map based on substitution. Comprehensive security analysis has been performed on the designed scheme using key space analysis, visual testing, histogram analysis, information entropy calculation, correlation coefficient analysis, differential analysis, key sensitivity test, and speed test.

Novel Image Encryption Scheme Based on Chebyshev ...
In this paper, we first apply Chebyshev polynomials to RFID path authentication protocol in the supply chain. Our proposed protocol not only satisfies the three well-known security requirements (the privacy, path unlinkability and tag unlinkability), but also provides a simple identity authentication protocol between readers and tags.

An RFID Path Authentication Protocol Based on Chebyshev ...
Encryption algorithm based on Chebyshev polynomials over finite fields Recently, a public-key encryption algorithm based on Chebyshev polynomials over prime finite fields was pro- posed. In addition to the semigroup property, the pseudo-randomness of these polynomials is an attractive feature for cryptographical purposes.

Public-key encryption based on Chebyshev polynomials over ...
When Chebyshev nodes are used, the maximum error is guaranteed to diminish with increasing polynomial order. The Remez Algorithm § The Chebyshev nodes are pretty good as far as minimising approximation error.

Practical Cryptography
Chebyshev Interpolation The Chebyshev interpolation is a well-known polynomial interpolation method that uses the Chebyshev polynomials as a basis of the interpolation polynomial. The Chebyshev poly- nomial of the first kind, in short, the Chebyshev polynomial is defined by the recursive relation T 0(x) = 1 T 1(x) = x T

Near-optimal Polynomial for Modulus Reduction Using L2 ...
In this paper, we make cryptanalysis on an image encryption based on Chebyshev chaotic map and

find the following: (1) chosen-plaintext attack can break the scheme. (2) There exist equivalent keys and weak keys for the encryption scheme. (3) The scheme has low sensitivity to the changes of plain image.

Cryptanalysis of an image encryption algorithm using ...
In, Fu et al. proposed a digital image encryption method by using Chirikov standard map based permutation and Chebyshev polynomial based diffusion operations. In, a bit-level permutation scheme using chaotic sequence sorting has been proposed for image encryption. The operations are completed by Chebyshev polynomial and Arnold Cat map.

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