# Robust Beamforming And Artificial Noise Design In

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# **Robust Beamforming And Artificial Noise**

# Robust Beamforming and Artificial Noise Design in K-User ...

Robust Beamforming and Artificial Noise Design in K-User Interference Channel with Simultaneous Wireless Information and Power Transfer Yuan Ren, Jian Zhou, and Hui Gao School of Information and Communication Engineering, Beijing University of ...

#### **CHAPTER 3 ROBUST ADAPTIVE BEAMFORMING**

beamformer is sensitive to noise enhancement at low SNR and additional constraint is required to bear the ellipsoidal constraint 32 ROBUST ADAPTIVE BEAMFORMING Adaptive beamforming is a complementary means for signal-to-interference-plus-noise-ratio (SINR) optimization (Van Trees 2002, Dimitris and Ingle 2005, Godara 1997)

# RESEARCH OpenAccess Robustbeamformingandcooperative ...

Gaussian artificial noise to confuse the KEs Throughoutthispaper, the KEsarepassive and the goal is to interpret the transmission information without try-ing to modify it It is assumed that S and R can (partially) secure robust beamforming design is beyond the scope of

# Qiang Li and Wing-Kin Ma Department of Electronic ...

A ROBUST ARTIFICIAL NOISE AIDED TRANSMIT DESIGN FOR MISO SECRECY Qiang Li and Wing-Kin Ma Department of Electronic Engineering, The Chinese University of Hong Kong, Shatin, NT, Hong Kong E-mail:qli@eecuhkeduhk, wkma@ieeeorg ABSTRACT This paper considers an artificial noise (AN) aided secrecy r ate max-

# ROBUST ARTIFICIAL NOISE-AIDED TRANSMIT OPTIMIZATION ...

ROBUST ARTIFICIAL NOISE-AIDED TRANSMIT OPTIMIZATION FOR ACHIEVING SECRECY AND ENERGY HARVESTING Qiang Li, Wing-Kin Ma† and Anthony Man-Cho So‡ School of Comm & Info Eng, University of Electronic Science & Technology of China, P R China †Dept of Electronic Engineering, The Chinese University of Hong Kong, Hong Kong ‡Dept of Sys Eng & Eng ...

# NEURAL NETWORK BASED ROBUST ADAPTIVE ...

The robust adaptive beamforming algorithm using RBFNN, provides excellent robustness to signal steering vector mismatches, enhances the array system performance under non ideal conditions and makes the mean output array SINR (Signal-to-Interference-plus- Noise ...

# Artificial Noise Aided Secure Cognitive Beamforming for ...

the authors of [32] designed an optimal beamforming scheme for MISO-aided CRNs In [33], the authors extended the con-tributions of [31] and [32] into a fading channel and the secure throughput was maximized by optimizing both the beam-forming vector and the transmission power The authors of [34] studied the robust beamforming design problem

# Artificial Noise Based Beamforming for the MISO VLC ...

[24], where robust beamforming and worst-case secrecy rate maximization were investigated in [21], [22] and artificial noise schemes where proposed in [23], [24] From an information-theoretic point of view and similar to the average power constrained case, one can use the existing

# Beamforming for Direction-of-Arrival (DOA) Estimation-A Survey

many applications Beamforming is the most prominent technique to estimate DOA In this survey, a study of various beamforming techniques and algorithms to estimate the direction of arrival of a signal is made An assessment on the background robust algorithms using Nyquist sampling rate and its Compressive sensing alternative is done

#### THE NATIONALITET U TURINTI

Leung, "Artificial noise generation from cooperative relays for everlasting secrecy in two-hop wireless networks," IEEE Journal on Selected Areas in Communications, vol 29, No 10, pp 2067 - 2076,

# Editorial: Special issue on 5G wireless communication ...

Niu et al (2017) investigated a joint robust co-operative beamforming and artificial noise scheme for secure communication in amplify-and-forward relay networks by treating the energy receiver as a potential eavesdropper To solve the formulated non- convex worst-case secrecy rate maximization prob-

# A Novel Beamformer Robust to Steering Vector Mismatch

Beamforming has long been used in many areas, such as radar, sonar, seismology, medical imaging, speech processing and wireless communications Introduction to beamforming can be found in [18]-[20] and the references therein Adata-dependent beamformer was proposed by Capon in [1] By exploiting the second order statistics of the array output,

# **AudioSmart Voice and Speech Processing**

and artificial intelligence (AI) transform the smart device market, o Noise can be at any angle relative to the microphones, even in the same direction as the speech Enabling robust voice communication and ASR in a real-world environment is challenging The environment is

# Robust Adaptive Beamforming Using Worst -Case ...

Robust Adaptive Beamforming Using Worst -Case Performance 0 p timizat ion Alex B Gershman Zhi-Quan Luo Sbahram Shahbazpanahi Sergiy A Vorobyov McMaster University Dept of Electrical and Computer Engineering 1280 Main St W, Hamilton Ontario L8S 4K1, Canada E-mail: gershmanaieee org invited paper AbsrraeCln recent decades, adaptive arrays have been widely

# Robust secure design for relay wireless sensor networks ...

eavesdropper and assuming that only imperfect channel state information can be attained, we propose a joint robust beamforming and artificial noise scheme We formulate the relay power minimization problem under both the secrecy rate constraint and the energy harvesting constraints, which is

non-convex and hard to tackle By studying the hidden

#### **ESEARCH NTERESTS DUCATION - USU**

5 11 Haijian Sun, Fuhui Zhou, Rose Qingyang Hu, Lajos Hanzo, "Robust Beamforming Design in a NOMA Cognitive Radio Network with SWIPT", accepted to IEEE Journal of Selected Areas in Communications 2018 12 Zekun Zhang, Rose Qingyang Hu, "Dense Cellular Network Analysis with LoS/NLoS Propagation and Bounded Path Loss Model", to appear in IEEE Communications Letter 2018

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Here, an Artificial noise-aided beamforming design problems under both perfect and imperfect channel State information (CSI) are studied to enhance the security of a multiple-input single-output NOMA SWIPT The Artificial noise aided beamforming [45]-[50] In [45], a robust beamforming scheme for MISO CRNs in the face of a bounded CSI

# RESEARCH OpenAccess Zero ...

without artificial noise, we first prove that the initial non-convex problem can be divided into two subproblems, based on different values of energy harvest requirements Then, the closed-form solutions for the subproblems are derived 3 For SWIPT with joint energy beamforming and information beamforming, we design zero-forcing

# Final report for "Estimation of Noise Level Reduction ...

DNL The interior noise is a difference between the exterior noise and the noise level reduction (NLR) The NLR measurement method is based on the ASTM E-966-10, ref 1, which specifies in detail the use of an artificial sound source placed outside of the house and a set of microphones positioned both outside and inside of the house The difference