**AN IMPROVED ADAPTIVE BEAMFORMING ALGORITHM FOR**

**5G INTERFERENCE-COEXISTENCE COMMUNICATION**

**[1] S. Wang, Y. Wang, B. Xu, Y. Li, and W. Xu**:

In this paper, we investigate the capacity performance of an in-band full-duplex (IBFD) amplify-and-forward two-way relay system under the effect of residual loop-back-interference (LBI). In a two-way IBFD relay system, two IBFD nodes exchange data with each other via an IBFD relay. Both two-way relaying and IBFD one-way relaying could double the spectrum efficiency theoretically. However, due to imperfect channel estimation, the performance of two-way relaying is degraded by self-interference at the receiver. Moreover, the performance of the IBFD relaying is deteriorated by LBI between the transmit antenna and the receive antenna of the node. Different from the IBFD one-way relay scenario, the IBFD two-way relay system will suffer from an extra level of LBI at the destination receiver. We derive accurate approximations of the average end-to-end capacities for both the IBFD and half-duplex modes. We evaluate the impact of the LBI and channel estimation errors on system performance. Monte Carlo simulations verify the validity of analytical results. It can be shown that with certain signal-to-noise ratio values and effective interference cancellation techniques, the IBFD transmission is preferable in terms of capacity. The IBFD two-way relaying is an attractive technique for practical applications.

**Summary:**

Analysed about the For both the IBFD and half-duplex modes, we get accurate approximations of average end-to-end capacity. The impact of the LBI and channel estimate errors on system performance is investigated. Monte Carlo simulations are used to test the accuracy of analytical results.

**[2] Z. Zhao, M. Xu, Yong Li, and M. Peng,:** A key problem of content caching networks is that extra radio resource blocks are consumed to push content objects, which leads to a decline of spectrum efficiency. To solve this problem, a non-orthogonal multiple access-based multicast (NOMA-MC) scheme is proposed in this paper, where pushing and multicasting content objects can be accomplished simultaneously, and thus the spectrum efficiency can be improved significantly. To evaluate the performance of the NOMA-MC scheme, an explicit expression of outage probability is derived, which shows that full diversity gains can be achieved in the single-cell scenario. Moreover, the theoretical results can be extended to the multi-cell scenario by establishing a stochastic geometry-based network model, which show that the NOMA-MC scheme can achieve better performance than the conventional orthogonal multiple access-based multicast scheme. Then, the joint design of power allocation and content matching is studied to enlarge the performance gains of the NOMA-MC scheme, and two distributed optimization algorithms are proposed by solving a hospitals/residents matching problem. Finally, simulation results are provided to verify the analytical results, and also demonstrate the performance gains of the NOMA-MC scheme.

**Summary:**

Studied about enlarge the performance gains of the NOMA-MC scheme, and two distributed optimization algorithms are proposed by solving a hospitals/residents matching problem.

**[3]**  [**D.L. Duttweiler,**](https://ieeexplore.ieee.org/author/38289214500) : On typical echo paths, the proportionate normalized least-mean-squares (PNLMS) adaptation algorithm converges significantly faster than the normalized least-mean-squares (NLMS) algorithm generally used in echo cancelers to date. In PNLMS adaptation, the adaptation gain at each tap position varies from position to position and is roughly proportional at each tap position to the absolute value of the current tap weight estimate. The total adaptation gain being distributed over the taps is carefully monitored and controlled so as to hold the adaptation quality (misadjustment noise) constant. PNLMS adaptation only entails a modest increase in computational complexity

**Summary:**

Studied about the adaptation gain in PNLMS adaptation varies from tap position to tap position and is typically proportional to the absolute magnitude of the current tap weight estimate at each tap location.

**[4] Y. Chen,Y. Gu,and A. O. Hero**: We propose a new approach to adaptive system identification when the system model is sparse. The approach applies ℓ1 relaxation, common in compressive sensing, to improve the performance of LMS-type adaptive methods. This results in two new algorithms, the zero-attracting LMS (ZA-LMS) and the reweighted zero-attracting LMS (RZA-LMS). The ZA-LMS is derived via combining a ℓ1 norm penalty on the coefficients into the quadratic LMS cost function, which generates a zero attractor in the LMS iteration. The zero attractor promotes sparsity in taps during the filtering process, and therefore accelerates convergence when identifying sparse systems. We prove that the ZA-LMS can achieve lower mean square error than the standard LMS. To further improve the filtering performance, the RZA-LMS is developed using a reweighted zero attractor. The performance of the RZA-LMS is superior to that of the ZA-LMS numerically. Experiments demonstrate the advantages of the proposed filters in both convergence rate and steady-state behavior under sparsity assumptions on the true coefficient vector. The RZA-LMS is also shown to be robust when the number of non-zero taps increases

**Summary:**

Studied that further improve the filtering performance, the RZA-LMS is developed using a reweighted zero attractor. The performance of the RZA-LMS is superior to that of the ZA-LMS numerically.

**[5]** **Emmanuel J. Candès · Michael B. Wakin :** Stephen P. Boyd: It is now well understood that (1) it is possible to reconstruct sparse signals exactly from what appear to be highly incomplete sets of linear measurements and (2) that this can be done by constrained 1 minimization. In this paper, we study a novel method for sparse signal recovery that in many situations outperforms 1 minimization in the sense that substantially fewer measurements are needed for exact recovery. The algorithm consists of solving a sequence of weighted 1-minimization problems where the weights used for the next iteration are computed from the value of the current solution. We present a series of experiments demonstrating the remarkable performance and broad applicability of this algorithm in the areas of sparse signal recovery, statistical estimation, error correction and image processing. Interestingly, superior gains are also achieved when our method is applied to recover signals with assumed near-sparsity in overcomplete representations—not by reweighting the 1 norm of the coefficient sequence as is common, but by reweighting the 1 norm of the transformed object. An immediate consequence is the possibility of highly efficient data acquisition protocols by improving on a technique known as Compressive Sensing.

**Summary:**

Learned that reweighted 1 minimization outperforms plain 1 minimization in a variety of setups. Therefore, this technique might be of interest to researchers in the field of Compressive Sensing and/or statistical estimation as it might help to improve the quality of reconstructions and/or estimations.