# Krzakala Florent

Researcher unique identifiers: Arxiv ,Google scholar, ORCID
Date of birth: 22/03/1976 Nationality: French Web site: krzakala.org

**• EDUCATION**

2011 Habilitation, Université Paris 6 UPMC
2002 PhD thesis in theoretic physics, Université Paris 11 Orsay
1999 Master Physics, Université Paris 11 Orsay

**• CURRENT POSITION(S)**

2013 – Full Professor, Sorbonne Université (ex UPMC) & Ecole Normale Supérieure, Paris
2016 – Holder of the Chaire ENS-CFM on data science in Ecole Normale Supérieure, Paris
2018 – Funder & Scientific board of LightOn, inc https://www.lighton.ai/

**• PREVIOUS POSITIONS**

2004 - 2013 Associate professor in Ecole Supérieure de Physique et Chimie ESPCI Paris, France
2002 - 2004 Post-doc in the group of Prof. Parisi @ Universita di Roma La Sapienza, Italy

**• MAJOR INVITED POSITION ABROAD**

Autumn 2020 Invited Research semester @ Berkeley University, USA, Simons Institute for Computing
Spring 2019 Invited Researcher @ KITP Santa Barbara USA
Spring 2018 Invited Prof. semester @ Duke University, USA, Mathematics Department
Spring 2016 Invited Research semester @ Berkeley University, USA, Simons Institute for Computing
2008 & 2009 Invited Research semester @ Los Alamos Nat. Lab. CNLS, New Mexico, USA

**• FELLOWSHIPS AND AWARDS**

2019 Fellow of the PRAIRIE "Paris Artificial Intelligence Institute"
2019 Fellow and member of the ELLIS society
2018 Prix Atos-Joseph Fourier 2018 in Artificial Intelligence
2015 Member of the Institut Universitaire de France, Paris
2012 - 2017 PI ERC Consolidator grant project SPARCS 307087

**• RESEARCH INTERESTS**

* Statistical Physics * Machine Learning * Neural Networks * Signal Processing * Inference on Graphs
* Constraint Optimisation Problems * Error Correcting codes * Information Theory * Compressed sensing
* Quantum Adiabatic algorithms * Computational Optics * Statistics * Computer science

**• PUBLICATION TRACK**

More than 130 articles in peer-reviewed journals & conference proceedings with **6800+** citations on Google Scholar. My h-index is **45** as of Jan 2020, and my i10-index is 106 (87 including publ. in the last 5 years). I take interdisciplinary literally & published in major journals in physics (*Phys. Rev. Lett; Phys Rev. X*), information theory (*IEEE Trans. Inf. Theory*), mathematics (*Advances in mathematics, Annals of Statistics*) & in high-impact generalist journals (*Proc. Nat. Acad. Sci.*). I also published in some of the most selective conferences in machine learning (*NIPS, ICML*), statistical learning theory (*COLT*), computer science (*STOC*), information theory (*ISIT, ITW*) & signal processing (*ICASPP*).

**INVITED PRESENTATION TO CONFERENCE, SCHOOLS AND UNIVERSITIES**

I have given hundreds of **seminars in major universities & research centers** in physics, mathematics, computer science, electrical engineering, or statistics departments: *Princeton, Berkeley, Rudgers, Harvard, MIT, Chicago, Duke, Los Alamos, Santa Fe, New York University, ICTP Trieste, Rome, ETHZ Zurich, EPFL Lausanne, Alan Turing Institute London, Cambridge, Tokyo, etc*. I also presented my work in hundreds of **international conferences and workshops** in physics, computer science & applied mathematics. I was also often invited by international universities to spend periods ranging from a month *(Trieste, Torino, Beijing, Tokyo, Santa Fe, Boulder)* to a full semester *(Los Alamos, Berkeley, Duke, KITP, Santa Barbara)*.
Recent invited conferences, keynotes and lectures includes:

- **Alan Turing Institute in London 2020,** *invited talk* **Statistics and computation** [video]
- **NeurIPS 2019,** *invited talk* @ NeurIPS workshop **Science meets Engineering of Deep Learning** [video]
- **Santa Barbara 2019** February, *invited talk* at the KITP institute [video]
- **1-4/2018** Lectures series *Topics in Probability theory* @ Duke University, USA **[course link]**
- **STOC 2018**: Symposium on theory on computing, workshop, Los Angeles 2018
- **ICMP 2018**: International Conference on Mathematical Physics, Montreal 2018
- **07/2017** Lectures series *Statistical mechanics, Glasses & Inference* @ UC Boulder (Colorado)**[video link]**
- **05/2016** Seminar in Simons Institute of computing @ UC Berkeley **[video link]**
- **Plenary** speaker at the **GRETSI 2015** congress in Lyon on signal processing **[video link]**

**• SUPERVISION OF GRADUATE STUDENTS & POSTDOCTORAL FELLOWS**

Current group (SPHINX team, in Ecole Normale Supérieure, Paris) of 7 PhD and 4 postdocs.
Many of my former post-docs & students have obtained permanent academic positions internationally …

* Jean Barbier ***PhD*** 2012-2015, now **professor** @ *ICTP Trieste, (Italy)*
* Laura Foini, ***Post-doc*** 2016-2017, now **researcher** @ CNRS *Saclay, (France)*
* Angelique Drémeau ***Post-doc*** 2014, now **assistant professor** @ *ENSTA Bretagne (France)*
* Sun Yifan ***PhD*** 2012, now **lecturer** @ *Renmin University of China, Beijing (China)*
* Boshra Rajaei ***Postdoc*** 2015, now **assistant professor** @ *Sadjad University of Technology (Iran)*.
* Pan Zhang ***Postdoc*** 2012-2013, now **associate professor** @ *Inst. of Theoretical Physics in Beijing (China)*
* Alejandro Lage-Castellanos ***Postdoc*** 2016-2017, now **associate professor** @*University of Havana* (*Cuba*)

… as well as research positions in world leading tech companies ….

* Alaa Saade, ***PhD*** student 2012-2016, now researcher scientist @ Google Deepmind (Paris, France)
* Christophe Schülke ***PhD*** student 2012-2016, @ Philips research (Hamburg, Germany)
* Francesco Caltagirone ***Postdoc*** 2015, @ Huawei research (Paris, France)

… in dynamic start-ups at the forefront of AI…

* Eric Tramel, ***Post-doc*** 2012-2016, now researcher scientist @OWKIN
* Andre Manoel, ***Post-doc*** 2014-2017, now researcher scientist @OWKIN

… or hold postdoc positions in prestigious universities:

* Marylou Gabrié, ***PhD*** 2016-2019, now postdoc @NYU & Flatiron Institute (USA)

I also co-advised many successful PhD students: e.g. Aurelien Decelle (Paris, now *Assoc. Prof. @ Orsay Fr*), Romain Mari (Paris, now *CNRS @ Grenoble Fr*), Ahmed El Alaoui (Berkeley, now *post-doc, Stanford USA)*.

**• TEACHING ACTIVITIES**

Lectures as university professor on physics, mathematics, computer science & machine learning in ***Sorbonne Université*** (since 2013), ***Ecole Normale Supérieure*** Paris (since 2013) and ***ESPCI Paris*** (2004-2014). I also gave invited lectures in a number of *summer schools* internationally in USA (Aspen, Boulder, Berkeley), China (Beijing), India (Bangalore), Italy (Trieste) & France (Les Houches). I taught invited long lectures in statistical inference & computer science in international universities such as ***EPFL*** Lausanne, ***Tokyo University*** in Japan & ***Duke University*** in USA.
I also taught Machine Learning for private companies, such as Capital Fund Management.

**• ORGANISATION OF SCIENTIFIC MEETINGS**

**8 international conferences and 4 international schools**

- In prep. (8/2020): 1 month school on *Theory of Machine learning* (~70 participants) in Les Houches **[link]**
- In prep. (6/2020): *Machine Learning & High-dimensional Statistics* (100 participants) ICTP Trieste **[link]**
- 8/2018: *Statistics physics and machine learning* (~100 participants) in Cargese **[link]**
- 2/2017: *Statistical physics, Learning, Inference and Networks*, Les Houches ~70 participants**[link]**
- 6/2016: *Physics methods in biology & computer science, Sat. of StatPhys2016,* in ENS, ~100 parts **[link]**
- 8/2014: 2 weeks School on *Spin glasses,* (~100 participants) in Cargese (Corsica) **[link]**
- 9/2013: School on *Optimization & message passing* (~70 participants) Les Houches **[link]**
- 2/2012: *Bridging Stat. physics, optimization, inference & learning*, Les Houches ~70 participants
- 12/2011: *Disordered systems and the Jamming Transition,* IHP Paris, ~70 participants **[link]**
- 6/2011: *Conference on Physics and Biological Systems*, Orsay ~50 participants
- 11/2010: *Statistical Physics of Complexity, & Biological information,* Orsay ~50 participants
- 7/2010: 1 week school *Stat. Phys. of Biological information* (~70 participants) Les Houches

**• INSTITUTIONAL RESPONSIBILITIES & REVIEWING ACTIVITIES**

2018 – Editorial Board, *Journal of Statistical Mechanics* / IOP Publishing
2016 – Organizer of the data science colloquium in Ecole Normale: **link: youtube channel**
2016 – Scientific Advisory Board & cofounder in **LightOn Inc**
2015 – 2017 Editorial Board, Scientific Report/ Nature Publishing
2013 Scientific Evaluation (HCERS), University of Grenoble/ France

Reviewer for physics journals (Nature, *PNAS*, Physical Review,…) as well as in machine learning & computer science conferences (ICML, NeurIPS, ICLR, ISIT, RANDOM, IASTAT, COLT,…). Reviewer for grant agencies, including ERC starting & advanced grants in panels PE2, PE6 & PE7, & French Agence Nationale de la Recherche (ANR). Member of 14 Ph.D & Habilitation committees, 7 as the jury president.

**• SELECTED CO-AUTHORS:**

A. Coja-Oghlan (Frankurt), S. Gigan (ENS), M. Jordan (Berkeley), J. Kurchan (ENS), N. Macris (EPFL), M. Mézard (ENS), A. Montanari (Stanford), C. Moore (SFI), E. Mossel (MIT), H. Nishimori (Tokyo), G. Parisi (Rome), C. Shalizi (CMU), A. Sly (Princeton), D. Sherrington (Oxford), L. Zdeborová (Saclay)

# Teaching records

**2007-2014 - ESPCI ParisTech (undergrad):**

| Period | Subject | Level | Type | Number of hours |
|---|---|---|---|---|
| 2006-2013 | Statistical Physics | L3 | Tutorats | 20h/year |
| 2007-2013 | Mathematics | L3/M1 | Tutorats & exercices | 20h/year |
| 2008-2012 | Quantum Mechanics | L3 | Tutorats & exercices | 30h/year |
| 2004-2013 | Computer Science | L3 | Lectures & exercices | 120h/year |

**2013-2020 Université Pierre & Marie Curie, Sorbonne Universités (undergrad):**

| Period | Subject | Level | Type | Number of hours |
|---|---|---|---|---|
| 2013 | Physics 101 | L1 | Exercices | 30h/year |
| 2014-2015 | Numerical methods | L3 | Exercices | 26h/year |
| 2016 | Waves mechanics | L2 | Exercices | 26h/year |
| 2013-2015 | Statistical physics | L3 | Lectures | 60h/year |
| 2018-2019 | Thermodynamics | L3 | Exercices | 30h/year |
| 2019-2020 | Machine Learning | M1 | Lectures | 40h/year |

**Master lectures (2016-…):** « Physics, Algorithms & Statistics » **[link]**, in the international master of complex systems **[link]**, 60h/year since 2016.

**Post-graduate lectures in Ecole Normale Supérieure (2013-…):**
Every year since 2014, I teach a new advanced lecture for post-graduate students in Ecole Normale Supérieure, for 30h/year:
* 2014: Statistical inference **[link]**
* 2015: Introduction to statistical learning **[link]**
* 2016: Machine Learning for Physicists **[link]**
* 2017: Deep learning: do-it-yourself **[link]** (this has been -to the best of knowledge- the first lecture in *Deep Learning* proposed in Paris in a doctoral school)
* 2019: Introduction to machine learning: from random forrest to reinforcement learning **[link]**
* 2020: Statistical learning theory (in preparation)

**Lecture given internationally in university & summer school**
* Beijing (**China**), Spring School 2008 (8h) **[link]**
* Tokyo (**Japan**) Graduate lecture @ Tokyo University 2010 (8h)
* Les Houches (**France**), Predoctoral School On Statistical Physics 2015 (12h) **[link]**
* Cargese (**France**) 2015 (6h)
* Trieste (**Italy**), ICTP, Spring College School 2015 (8h) **[link]**
* Bangalore (**India**) ICTS, Winter School December 2016 (6h) **[link video]**
* UC Boulder, *Colorado* (**USA**): Juillet 2017 Summer School (8h) **[link video]**
* EPFL (Lausanne, **Switzerland**) Novembre 2017: Graduate lecture Physique/Math (16h)
* Duke University, *North Carolina* (**USA**):Math Graduate lecture, Spring 2018 (30h) **[link]**

# Funding ID (last 10 years)

**2019-2023: Chaire Prairie** "Institut Interdisciplinaire d'Intelligence Artificielle" **(450 000€)**
**2019-2021: AAP IRIS SDDS** (co-PI) "Sciences des données et données de la science" (**67 500€**)
**2019 : Google Cloud Research grant (20000$)**
**2016-2020: Holder of the chair ENS-CFM** "Modèles et Sciences des données" **(200 000€/year)**
**2018-2021: Agence Nationale de la Recherche** Project PAIL (PI) **(270 000€)**
**2018-2019: DARPA project PIMLICo** (co-PI) **(121 000 $)**
**2017 : Microsoft Azure Research Award (5000$)**
**2011-2017: ERC Consolidator** (PE7) SPARCS **(1 370 000€)**
**2015-2016: PSL PSI:Paris** (co-PI) (**67500€**)
**2012-2013: Institut des systèmes complexes, Paris** (PI)(**67500€**)
**2009-2010: MIT-France Seed Fund grant** for Quantum Adiabatic Algorithm (co-PI) (**15000€**)

# Publication list: published books, journals articles & proceedings

*As of December 2019, I have published 79 papers in international peer-reviewed journals, 51 papers in international peer reviewed conference proceedings, wrote two reviews, participated in a books, edited 2, wrote 2 popularisation articles in French media, and a patent. Details follows:*

- ***Popularisation (in french)***

[2] **Quels algorithmes pour quelles données? [link]**
Florent Krzakala et Lenka Zdeborová La Recherche, vol 537, Juillet-Aout 2018

[1] **Un algorithme issu de la physique pour traitement du signal [link]**
Florent Krzakala La Recherche, vol 461, Février 2012

- ***Books & long Reviews***

*I have written two long reviews on different aspects of my research:*

[5] **Statistical physics of inference: Thresholds and algorithms [link]**
Lenka Zdeborová, Florent Krzakala Advances in Physics Volume 65, 5 (2016)

[4] **The Quantum Adiabatic Algorithm applied to random optimization problems: the quantum spin glass perspective [link]**
V. Bapst, L. Foini, F. Krzakala, G. Semerjian, F. Zamponi Physics Reports 523, 127 (2013)

*I edited the lecture notes of the Les Houches school I organised in 2013*

[3] **Statistical Physics, Optimization, Inference, and Message-Passing Algorithms: Lecture Notes of the Les Houches School of Physics [link]**: by F. Krzakala, F. Ricci-Tersenghi, L. Zdeborová, R. Zecchina , Eric W. Tramel and Leticia F. Cugliandolo Oxford publishing (2013)

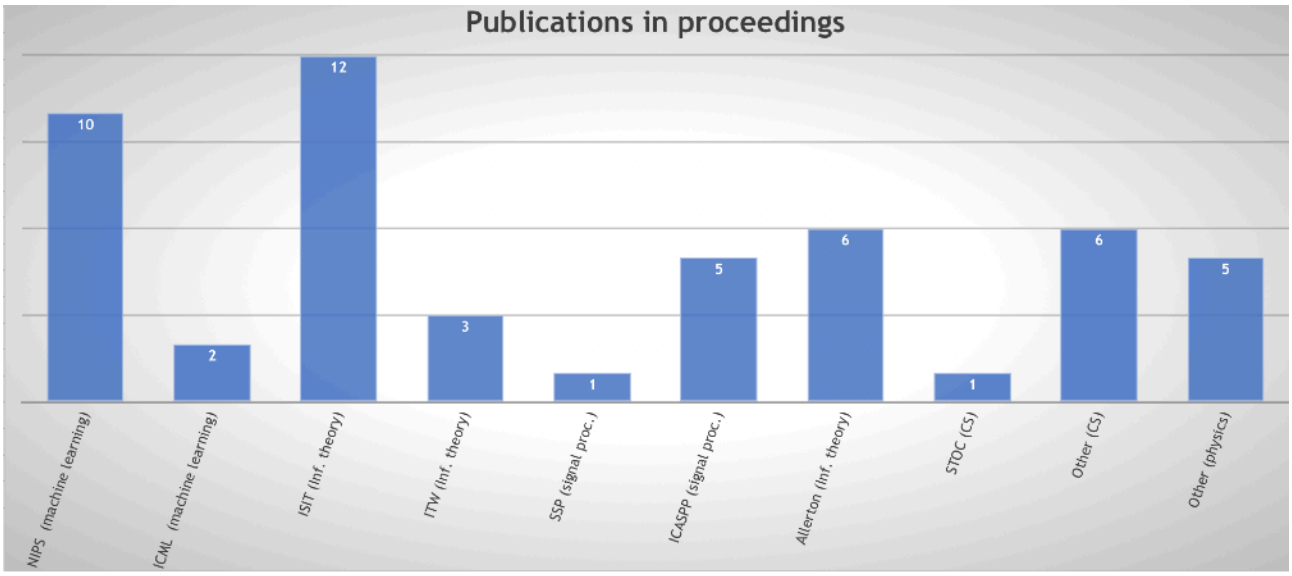
*I guess-edited a special issue of Journal of Statistical Mechanics in Machine Learning*
[2] **Machine Learning 2019, Journal of Statistical Mechanics: Theory and Experiment [link]**
Edited by F. M. Mezard, R. Zecchina, Y. Kabashima, B. Kappen, F. Krzakala & M. Opper.

*I cowrote one chapter of the Les Houches school lecture notes I participated in 2002*

[1] **Hiking through glassy phases: physics beyond aging [link]** L. Berthier, V. Viasnoff, O. White, V. Orlyanchik, FK, Lecture notes, Les Houches, July 2002 in *"Slow relaxations and nonequilibrium dynamics in condensed matter*"; Eds: J.-L. Barrat, J. Dalibard, M. Feigelman, J. Kurchan (Springer, Berlin, 2003)

- ***Conference proceedings***

*As of December 2019, I have written 51 papers in international peer reviewed conferences proceedings, mainly in machine learning, computer science & information theory.*




[51] **The spiked matrix model with generative priors** **[link]**
Benjamin Aubin, Bruno Loureiro, Antoine Maillard, Florent Krzakala, Lenka Zdeborová; *Advances in Neural Information Processing Systems,* NeurIPS'19

[50] **Dynamics of stochastic gradient descent for two-layer neural networks in the teacher-student setup** **[link]**
Sebastian Goldt, Madhu S. Advani, Andrew M. Saxe, Florent Krzakala, Lenka Zdeborová, Advances in Neural Information Processing Systems, *oral presentation* at NeurIPS 2019

[49] **Who is Afraid of Big Bad Minima? Analysis of Gradient-Flow in a Spiked Matrix-Tensor Model** **[link]**
Stefano Sarao Mannelli, Giulio Biroli, Chiara Cammarota, Florent Krzakala, Lenka Zdeborová, Advances in Neural Information Processing Systems, *spotlight presentation* at NeurIPS 2019

[48] **Passed & Spurious: analysing descent algorithms and local minima in spiked matrix-tensor model** **[link]**
Stefano Sarao Mannelli, Florent Krzakala, Pierfrancesco Urbani, Lenka Zdeborová, Proceedings of the 36th International Conference on Machine Learning (ICML '19), PMLR 97:4333-4342, 2019.

[47] **Entropy and mutual information in models of deep neural networks,** **[link]**
Marylou Gabrié, Andre Manoel, Clément Luneau, Jean Barbier, Nicolas Macris, Florent Krzakala, Lenka Zdeborová , Advances in Neural Information Processing Systems, 1821-1831
*spotlight presentation @ NeurIPS'18*

[46] **The committee machine: Computational to statistical gaps in learning a two-layers neural network** **[link]**
Benjamin Aubin, Antoine Maillard, Jean Barbier, F. Krzakala, Nicolas Macris, Lenka Zdeborová, Advances in Neural Information Processing Systems, *spotlight presentation* @NeurIPS'18

[45] **Estimation in the spiked Wigner model: A short proof of the replica formula** [link]
Ahmed El Alaoui, and Florent Krzakala
IEEE International Symposium on Information Theory (ISIT), (2018)

[44] **The Mutual Information in Random Linear Estimation Beyond i.i.d. Matrices** [link]
Jean Barbier, Nicolas Macris, Antoine Maillard, Florent Krzakala
IEEE International Symposium on Information Theory (ISIT), (2018)

[43] **Scaling Up Echo-State Networks With Multiple Light Scattering** [link]
Jonathan Dong ; Sylvain Gigan ; Florent Krzakala ; Gilles Wainrib
2018 IEEE Statistical Signal Processing Workshop (SSP) (2018)

[42] **Streaming Bayesian inference: theoretical limits and mini-batch approximate message-passing** [link]
A. Manoel, F. Krzakala, E. W. Tramel, L. Zdeborová 2017 55th Annual Allerton Conference on Communication, Control, and Computing (Allerton), Monticello, IL, USA, p 1048-1055 (2017)

[41] **Decoding from Pooled Data: Phase Transitions of Message Passing** [link]
Ahmed El Alaoui, Aaditya Ramdas, Florent Krzakala, Lenka Zdeborová, Michael I. Jordan
IEEE International Symposium on Information Theory (ISIT), pages: 2780 - 2784 (2017)

[40] **Multi-Layer Generalized Linear Estimation** [link]
Andre Manoel, Florent Krzakala, Marc Mézard, Lenka Zdeborová
IEEE International Symposium on Information Theory (ISIT), pages: 2098-2102 (2017)

[39] **Statistical and computational phase transitions in spiked tensor estimation** [link]
Thibault Lesieur, Léo Miolane, Marc Lelarge, Florent Krzakala, Lenka Zdeborová
IEEE International Symposium on Information Theory (ISIT), pages: pp. 511-515. (2017)

[38] **Information-theoretic thresholds from the cavity method** [link]
A. Coja-Oghlan, F. Krzakala, W. Perkins, L. Zdeborová, In Proceedings of 49th Annual ACM SIGACT Symposium on the Theory of Computing, Montreal, Canada, June 2017 (STOC'17)

[37] **Fast Randomized Semi-Supervised Clustering** [link]
Alaa Saade, Florent Krzakala, Marc Lelarge, Lenka Zdeborová
To appear in International Meeting on "High-Dimensional Data-Driven Science" (HD$^3$-2017)

[36] **Phase transitions and optimal algorithms in high-dimensional Gaussian mixture clustering** [link] T. Lesieur, C. De Bacco, J. Banks, F. Krzakala, C. Moore, L. Zdeborová 2016 54th Annual Allerton Conference on Communication, Control, and Computing (Allerton)

[35] **The Mutual Information in Random Linear Estimation** [link]
Jean Barbier, Mohamad Dia, Nicolas Macris, Florent Krzakala 2016 54th Annual Allerton Conference on Communication, Control, and Computing (Allerton), Pages: 625 - 632

[34] **Mutual information for symmetric rank-one matrix estimation: A proof of the replica formula** [link] Jean Barbier, Mohamad Dia, Nicolas Macris, Florent Krzakala, Thibault Lesieur, Lenka Zdeborová Advances in Neural Information Processing Systems 29 (NIPS 2016)

[33] **Inferring Sparsity: Compressed Sensing using Generalized Restricted Boltzmann Machines** [link] E.W. Tramel, A. Manoel, F. Caltagirone, M. Gabrié, F. Krzakala
IEEE Information Theory Workshop (ITW), Pages: 265 - 269 (2016)

[32] **Clustering from Sparse Pairwise Measurements** [link]
Alaa Saade, Marc Lelarge, Florent Krzakala, Lenka Zdeborová, Proceedings of the 2016 IEEE IEEE International Symposium on Information Theory (ISIT), pages: 780 - 784 (2016)

[31] **Mutual Information in Rank-One Matrix Estimation** [link]
F. Krzakala, J. Xu, L. Zdeborová 2016 IEEE Information Theory Workshop (ITW), 71 - 75 (2016)

[30] **Intensity-only optical compressive imaging using a multiply scattering material and a double phase retrieval approach** [link]
B. Rajaei, E. W. Tramel, S. Gigan, F. Krzakala, L. Daudet, Proceedings of the 2016 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP) pages: 4054 - 4058

[29] **Matrix Completion from Fewer Entries: Spectral Detectability and Rank Estimation** [link] Alaa Saade, Florent Krzakala, Lenka Zdeborová
Advances in Neural Information Processing Systems (NIPS 2015) 28, pages 1261–1269 (2015)

[28] **Random Projections through multiple optical scattering: Approximating kernels at the speed of light** [link] A. Saade, F. Caltagirone, I. Carron, L. Daudet, A. Drémeau, S. Gigan, F. Krzakala Proc. of the 2016 IEEE Int. Conf. on Acoustics, Speech and Signal Proc. ICASSP (2016)

[27] **MMSE of probabilistic low-rank matrix estimation: Universality with respect to the output channel** [link] Thibault Lesieur, Florent Krzakala, Lenka Zdeborová 2015 53rd Annual Allerton Conference on Communication, Control, and Computing, page 680 - 687, (2015)

[26] **Scampi: a robust approximate message-passing framework for compressive imaging** J. Barbier, E. W. Tramel, F. Krzakala [link] Presented at the 2015 International Meeting on High-Dimensional Data Driven Science, Kyoto, Japan, J. Phys.: Conf. Ser. 699 012013 (HD$^3$-2015)

[25] **Spectral Detection on Sparse Hypergraphs** [link]
Maria Chiara Angelini, Francesco Caltagirone, Florent Krzakala, Lenka Zdeborová 53rd Annual Allerton Conference on Communication, Control, and Computing, pages 66 - 73, IEEE (2015)

[24] **Training Restricted Boltzmann Machines via the Thouless-Anderson-Palmer Free Energy** [link] Marylou Gabrié, Eric W. Tramel, Florent Krzakala
Advances in Neural Information Processing Systems (NIPS 2015) 28, pages 640–648. (2015)

[23] **Spectral Detection in the Censored Block Model** [link]
A. Saade, F. Krzakala, M. Lelarge, L. Zdeborová Information Theory (ISIT), 2015 IEEE International Symposium on , vol., no., pp.1184-1188, 14-19 June 2015

[22] **Phase Transitions in Sparse PCA** [link]
T. Lesieur, F. Krzakala, L. Zdeborová,
IEEE Inter. Symp. on Information Theory (ISIT), pp.1635-1639, 14-19 June 2015

[21] **Phase recovery from a Bayesian point of view: the variational approach [link]**
Angélique Drémeau, Florent Krzakala Acoustics, Speech and Signal Processing (ICASSP), 2015 IEEE International Conference on Year: 2015 Pages: 3661- 3665 (2015)

[20] **Adaptive Damping and Mean Removal for the Generalized Approximate Message Passing Algorithm[link]**
J. Vila, P. Schniter, S. Rangan, F. Krzakala, L. Zdeborová Acoustics, Speech and Signal Processing (ICASSP), 2015 IEEE International Conference on Year: 2015 Pages: 2021 - 2025

[19] **Sparse Estimation with the Swept Approximated Message-Passing Algorithm [link]**
Andre Manoel, Florent Krzakala, Eric W. Tramel, Lenka Zdeborová
Proceedings of the 32nd International Conference on Machine Learning (ICML), 2015, 1123-1132

[18] **Spectral Clustering of Graphs with the Bethe Hessian [link]**
Alaa Saade, Florent Krzakala, Lenka Zdeborová
Advances in Neural Information Processing Systems 27 (NIPS 2014) pp 406-414

[17] **Replica Analysis and Approximate Message Passing Decoder for Superposition Codes [link]** Jean Barbier, Florent Krzakala
IEEE International Symposium on Information Theory (ISIT), page(s) 1494 - 1498 (2014)

[16] **Variational Free Energies for Compressed Sensing [link]**
Florent Krzakala, Andre Manoel, Eric W. Tramel, Lenka Zdeborová
IEEE International Symposium on Information Theory (ISIT), page(s) 1499 - 1503 (2014)

**[15] On Convergence of Approximate Message Passing [link]**
Francesco Caltagirone, Florent Krzakala, Lenka Zdeborová Information Theory Proceedings (ISIT), IEEE International Symposium on Information Theory (ISIT), page(s) (2014)

[14] **The hard-core model on random graphs revisited [link]**
J. Barbier, F. Krzakala, L. Zdeborová, Pan Zhang International Meeting on “Inference, Computation and Spin Glasses" (ICSG2013), Sapporo, Japan: J. Phys.: Conf. Ser. 473 012021 (2013)

[13] **Performance of simulated annealing in p-spin glasses [link]**
Florent Krzakala, Lenka Zdeborová, International Meeting on "Inference, Computation, and Spin Glasses" (ICSG2013),: J. Phys.: Conf. Ser. 473 012022 (2013)

[12] **Robust error correction for real-valued signals via message-passing decoding and spatial coupling [link]**
J. Barbier, F. Krzakala, L. Zdeborová P. Zhang IEEE Information Theory Workshop 1,5 (ITW 2013)

[11] **Blind Calibration in Compressed Sensing using Message Passing Algorithms [link]**
Christophe Schülke, Francesco Caltagirone, Florent Krzakala, Lenka Zdeborová
Advances in Neural Information Processing Systems 26 (NIPS 2013), pp 566--574 (2013)

[10] **Non-adaptive pooling strategies for detection of rare faulty items [link]**
Pan Zhang, Florent Krzakala, Marc Mézard, Lenka Zdeborová IEEE International Conference on Communications Workshops (ICC 2013), Pages: 1409 - 1414, (2013)

[9] **Phase Diagram and Approximate Message Passing for Blind Calibration and Dictionary Learning** [link] Florent Krzakala, Marc Mézard, Lenka Zdeborová
IEEE International Symposium on Information Theory (ISIT), page(s) 659 - 663 (2013)

[8] **Compressed Sensing under Matrix Uncertainty: Optimum Thresholds and Robust Approximate Message Passing** [link]
Florent Krzakala, Marc Mézard, Lenka Zdeborová Acoustics, Speech and Signal Processing (ICASSP), 2013 IEEE International Conference on, pages 5519 - 5523 (2013)

[7] **Compressed Sensing of Approximately-Sparse Signals: Phase Transitions and Optimal Reconstruction** [link]
Jean Barbier, Florent Krzakala, Marc Mézard, Lenka Zdeborová Communication, Control, and Computing (Allerton), 2012 50th Annual Allerton Conference on , pp.800,807, 1-5 Oct. (2012)

[6] **Quantum Annealing of Hard Problems** [link]
Thomas Jorg, Florent Krzakala, Jorge Kurchan, A. C. Maggs Proceedings of the "YKIS 2009: Frontiers in Non-equilibrium Physics" conference in Kyoto, August 2009. Progress of Theoretical Physics Supplement No. 184 (2010) pp. 290-303

[5] **Constraint optimization and landscapes**[link]
Jorge Kurchan & Florent Krzakala Contribution to STATPHYS23; Eur. Phys. J. B 64, 563 (2008)

[4] **Phase Transitions and Computational Difficulty in Random Constraint Satisfaction Problems** [link]
Florent Krzakala and Lenka Zdeborová Proceedings of the International Workshop on Statistical-Mechanical Informatics 2007, Kyoto (Japan) J. Phys.: Conf. Ser. 95 012012 (2017)

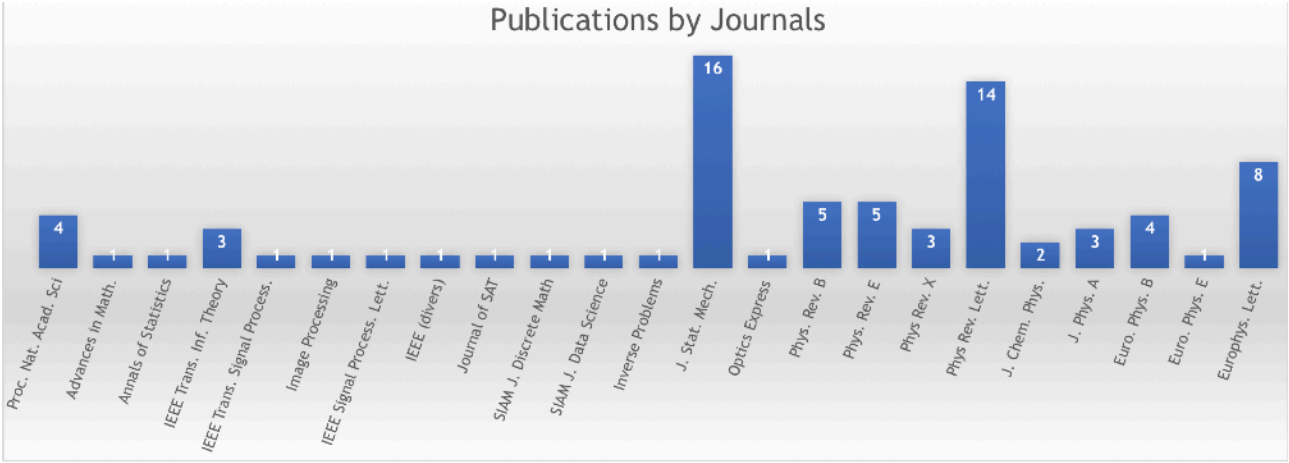
[3] **Aging, memory and rejuvenation: some lessons from simple models** [link]
Florent Krzakala, Federico Ricci-Tersenghi Proceedings of the Summer school "Ageing and the glass transition", Luxembourg 14-25 Sept. 2005 2006 J. Phys.: Conf. Ser. 40 42-49

[2] **How many colors to color a random graph?** [link]
F. Krzakala, Proceeding of "Statistical Physics of Disordered Systems and Its Applications", Hayama (Japan), July 2004 Progress of Theoretical Physics Supplement No.157 (2005) pp. 357-360

[1] **Zero temperature phase diagram of finite connectivity spin glasses** [link]
F. Krzakala, Proceeding of "Statistical Physics of Disordered Systems and Its Applications", Hayama (Japan), July 2004, Progress of Theoretical Physics Supplement No.157 (2005) pp. 77-81

- ***Publications in international peer reviewed journals***

*As of December 2019, I have published 79 papers in international peer reviewed journals in theoretical physics as well as in various aspects of computer science & applied mathematics:*




[79] **Detection limits in the spiked Wigner model** [link]
Ahmed El Alaoui, Florent Krzakala ; Michael I. Jordan Annals of Statistics, to appear (2020)

[78] **Marvels & Pitfalls of the Langevin Algorithm in Noisy High-dimensional Inference** [link]
Stefano Sarao Mannelli, Giulio Biroli, Chiara Cammarota, Florent Krzakala, Pierfrancesco Urbani, Lenka Zdeborová Phys. Rev. X to appear, (2020)

[77] **On the Universality of Noiseless Linear Estimation with Respect to the Measurement Matrix** [link] A. Abbara, A. Baker, F. Krzakala, L. Zdeborová, J. Phys. A: Math. Theor. (2020)

[76] **The committee machine: Computational to statistical gaps in learning a two-layers neural network** [link] Benjamin Aubin, Antoine Maillard, Jean Barbier, F. Krzakala, Nicolas Macris Lenka Zdeborová J. Stat. Mech. (2019) 124023

[75] **Entropy and mutual information in models of deep neural networks,** [link]
Marylou Gabrié, Andre Manoel, Clément Luneau, Jean Barbier, Nicolas Macris, Florent Krzakala, Lenka Zdeborová J. Stat. Mech. (2019) 124014

[74] **High-temperature Expansions and Message Passing Algorithms** [link] A. Maillard, L. Foini, A. Lage Castellanos, F. Krzakala, M. Mézard, L. Zdeborová J. Stat. Mech. (2019) 113301

[73] **Optical Reservoir Computing using multiple light scattering for chaotic systems prediction** [link] Jonathan Dong ; Mushegh Rafayelyanment; Florent Krzakala ; Sylvain Gigan ; IEEE Journal of Selected Topics in Quantum Electronics, 26, 1

[72] **Approximate Survey Propagation for Statistical Inference** [link]
F. Antenucci, F. Krzakala, P. Urbani and L. Zdeborová J. Stat. Mech. (2019) 023401

[71] **Decoding from Pooled Data: Sharp Information-Theoretic Bounds** [link]
Ahmed El Alaoui ; Aaditya Ramdas ; Florent Krzakala ; Lenka Zdeborová ; Michael I. Jordan SIAM Journal on Mathematics of Data Science, 1(1), 161–188. (2019)

[70] **Optimal Errors and Phase Transitions in High-Dimensional Generalized Linear Models** [link] J. Barbier, F. Krzakala, N. Macris, L. Miolane, L. Zdeborová
Proc. Nat. Acad. Sci. (2019) 116 (12) 5451-5460

[69] **Deterministic and generalized framework for unsupervised learning with restricted Boltzmann machines** [link] Eric W. Tramel, Marylou Gabrié, Andre Manoel, Francesco Caltagirone, and Florent Krzakala, Phys. Rev. X 8, 041006 (2018)

[68] **Information-theoretic thresholds from the cavity method** [link]
A. Coja-Oghlan, F. Krzakala, W. Perkins, L. Zdeborová,
Advances in Mathematics Volume 333, 31 July 2018, Pages 694-795 (2018)

[67] **Decoding from Pooled Data: Phase Transitions of Message Passing** [link]
Ahmed El Alaoui ; Aaditya Ramdas ; Florent Krzakala ; Lenka Zdeborová ; Michael I. Jordan
IEEE Transactions on Information Theory, 65 1 (2019 )

[66] **Constrained Low-rank Matrix Estimation: Phase Transitions, Approximate Message Passing and Applications** [link] T. Lesieur, FK & L. Zdeborová, J. Stat. Mech. 7 (2017) 073403

[65] **Approximate message-passing decoder and capacity-achieving sparse superposition codes** [link] J. Barbier & F. Krzakala IEEE Transactions on Information Theory, 63, 8 (Aug. 2017)

[64] **Spectral Bounds for the Ising Ferromagnet on an Arbitrary Given Graph** [link]
Alaa Saade, Florent Krzakala, Lenka Zdeborová J. Stat. Mech. 2017 053403

[63] **Performance Limits for Noisy Multi-Measurement Vector Problems** [link]
J. Zhu, D. Baron, F. Krzakala IEEE Transactions on Signal Processing, 65, 9,2444 - 2454 (2017)

[62] **Robust phase retrieval with the swept approximate message passing algorithm** [link]
B. Rajaei, S. Gigan, F. Krzakala, L. Daudet Image Processing On Line, 7 (2017), pp. 43-55

[61] **Fast phase retrieval for high dimensions: A block-based approach** [link]
B. Rajaei, S. Gigan, F. Krzakala, L. Daudet IEEE Signal Processing Letters 23, 1179 - 1182 (2016)

[60] **Phase transitions and sample complexity in Bayes-optimal matrix factorization** [link]
Y. Kabashima, F. Krzakala, M. Mézard, A. Sakata, L. Zdeborová
IEEE Transactions on Information Theory (Volume:62 , Issue: 7, Pages: 4228 - 4265) (2016)

[59] **Approximate Message Passing with Restricted Boltzmann Machine Priors** [link]
E. W. Tramel, A. Drémeau and F. Krzakala J. Stat. Mech. (2016) 073401

[58] **Approximate message-passing with spatially coupled structured operators, with applications to compressed sensing and sparse superposition codes** [link]
J. Barbier, C. Schülke, F. Krzakala J. Stat. Mech. (2015) P05013

[57] **Reference-less measurement of the transmission matrix of a highly scattering material using a DMD and phase retrieval techniques** [link] A. Dremeau, A. Liutkus, D. Martina, O. Katz, C. Schulke, F. Krzakala, S. Gigan, L. Daudet Optics Express Vol. 23, Issue 9, 11898-11911 (2015)

[56] **Belief-Propagation Guided Monte-Carlo Sampling** [link]
A. Decelle & F. Krzakala Phys. Rev. B 89, 214421 (2014)

[55] **Spectral density of the non-backtracking operator** [link]
A. Saade, F. Krzakala & L. Zdeborová 2014 EPL 107 50005

[54] **Reweighted belief propagation and quiet planting for random K-SAT** [link]
F. Krzakala, M. Mézard & L. Zdeborová J. on Satisfiability, Boolean Mod. & Computation 8 (2014)

[53] **Model Selection for Degree-corrected Block Models** X. Yan, C. Rohilla Shalizi, J. E. Jensen, F. Krzakala, C. Moore, L. Zdeborová, P. Zhang, Y. Zhu J. Stat. Mech. (2014) P05007

**[**52] **Spectral redemption: clustering sparse networks** [link] F. Krzakala, C. Moore, E. Mossel, J. Neeman, A. Sly, F. Zdeborová, P. Zhang Proc. of the Nat. Academy of Sciences 110, no. 52 (2013)

[51] **Belief Propagation Reconstruction for Discrete Tomography** [link]
E. Gouillart, F. Krzakala, M. Mezard & L. Zdeborová Inverse Problems 29, 3 (2013) 035003

[50] **Fragility and hysteretic creep in frictional granular jamming** [link]
M. M. Bandi, M. K. Rivera, F. Krzakala, R. E. Ecke Phys. Rev. E 87, 042205 (2013)

[49] **Ultrametric probe of the spin-glass state in a field** [link]
H. G. Katzgraber, T. Jorg, F. Krzakala, A. K. Hartmann Phys. Rev. B 86, 184405 (2012)

[48] **Comparative Study for Inference of Hidden Classes in Stochastic Block Models** [link]
P. Zhang, F. Krzakala, J. Reichardt & L. Zdeborová J. Stat. Mech. (2012) P12021

[47] **Probabilistic Reconstruction in Compressed Sensing: Algorithms, Phase Diagrams, and Threshold Achieving Matrices** [link]
F. Krzakala, M. Mézard, F. Sausset, Y. Sun, L. Zdeborová J. Stat. Mech. (2012) P08009

[46] **Statistical physics-based reconstruction in compressed sensing** [link]
F. Krzakala, M. Mézard, F. Sausset, Y. Sun, L. Zdeborová Phys. Rev. X 2, 021005 (2012)

[45] **On the relation between kinetically constrained models of glass dynamics and the random first-order transition theory** [link]
Laura Foini, Florent Krzakala, Francesco Zamponi J. Stat. Mech. (2012) P06013

[44] **Following states in temperature in the spherical s+p-spin glass model** [link]
Y. Sun, A. Crisanti, F. Krzakala, L. Leuzzi, L. Zdeborová J. Stat. Mech. (2012) P07002

[43] **The nature of the different zero-temperature phases in discrete two-dimensional spin glasses: Entropy, universality, chaos and cascades in the renormalization group flow** [link]
Thomas Jörg and Florent Krzakala, J. Stat. Mech. (2012) L01001
*Special insight on this paper in J. Phys. A by A. Hartmann [link]*

[42] **Asymptotic analysis of the stochastic block model for modular networks and its algorithmic applications** [link]
A. Decelle, F. Krzakala, C. Moore, F. Zdeborová Phys. Rev. E 84, 066106 (2011)

[41] **Phase transition in the detection of modules in sparse networks** [link]
A. Decelle, F. Krzakala, C. Moore, F. Zdeborová Phys. Rev. Lett. 107, 065701 (2011)

[40] **Random-field p-spin glass model on regular random graphs** [link]
Y. Matsuda, H. Nishimori, L. Zdeborová, F. Krzakala J. Phys. A: Math. Theor. 44 (2011) 185002

[39] **Glassy dynamics as a melting process** [link]
F. Krzakala & L. Zdeborová, J J. Chem. Phys. 134, 034513 (2011)

[38] **Glassy aspects of melting dynamics** [link]
F**.** Krzakala & L. Zdeborová, J. Chem. Phys. 134, 034512 (2011)

[37] **No spin glass phase in ferromagnetic random-field random-temperature scalar Ginzburg-Landau model** [link]
F. Krzakala, F. Ricci-Tersenghi, D. Sherrington, L. Zdeborová J. Phys. A:. 44, 042003 (2011)
*Special insight on No spin glass phase in the random field Ising model in J. Phys. A [link]*

[36] **Quiet Planting in the Locked Constraint Satisfaction Problems** [link]
Lenka Zdeborová, Florent Krzakala SIAM J. Discrete Math. 25, 750-770 (2011)

[35] **First-order transitions and the performance of quantum algorithms in random optimization problems** [link]
T.Jorg, F.Krzakala, G.Semerjian, F.Zamponi Phys. Rev. Lett. 104, 207206 (2010)

[34] **Following Gibbs States Adiabatically - The Energy Landscape of Mean Field Glassy Systems** [link] F. Krzakala & L. Zdeborová 2010 EPL 90 66002

[33] **Inference in particle tracking experiments by passing messages between images** [link] M. Chertkov, L. Kroc, F. Krzakala, M. Vergassola, L. Zdeborová Proc. Nat. Acad. Sci. 107:7663,2010

[32] **Elusive Glassy Phase in the Random Field Ising Model** [link]
F. Krzakala, F. Ricci-Tersenghi, D. Sherrington, L. Zdeborová Phys. Rev. Lett. 104, 207208 (2010)

[31] **Generalization of the cavity method for adiabatic evolution of Gibbs states** [link]
Lenka Zdeborová and Florent Krzakala Phys. Rev. B 81, 224205 (2010)
*Editors' Suggestion in Phys. Rev. B*

[30] **Energy gaps in quantum first-order mean-field-like transitions: The problems that quantum annealing cannot solve** [link]
T. Jorg, F. Krzakala, J. Kurchan, A. C. Maggs, J. Pujos EPL, 89 (2010) 40004

[29] **Hiding Quiet Solutions in Random Constraint Satisfaction Problems** [link]
Lenka Zdeborová and Florent Krzakala Phys. Rev. Lett. 102, 238701 (2009)

[28] **Jamming versus Glass Transitions** [link]
Romain Mari, Florent Krzakala, and Jorge Kurchan Phys. Rev. Lett. 103, 025701(2009)

[27] **On the path integral representation for quantum spin models and its application to the quantum cavity method and to Monte Carlo simulations** [link]
F. Krzakala, A. Rosso, G. Semerjian, F. Zamponi Phys. Rev. B 78, 134428 (2008)

[26] **A Lattice Model for Colloidal Gels and Glasses** [link]
Florent Krzakala, Marco Tarzia, Lenka Zdeborová Phys. Rev. Lett. 101, 165702 (2008)

[25] **Simple Glass Models and their Quantum Annealing** [link]
Thomas Jorg, Florent Krzakala, Jorge Kurchan, A. C. Maggs Phys. Rev. Lett. 101, 147204 (2008)

[24] **Behavior of Ising Spin Glasses in a Magnetic Field** [link]
Thomas Jorg, Helmut G. Katzgraber, Florent Krzakala Phys. Rev. Lett. 100, 197202 (2008)

[23] **Potts Glass on Random Graphs** [link]
Florent Krzakala & Lenka Zdeborová EPL, 81 (2008) 57005

[22] **Comment on « Ultrametricity in the Edwards-Anderson Model »** [link]
Thomas Jorg, Florent Krzakala Phys. Rev. Lett. 100, 159701 (2008)

[21] **Phase Transitions in the Coloring of Random Graphs** [link]
Lenka Zdeborová and Florent Krzakala Phys. Rev. E 76, 031131 (2007)

[20] **A Landscape Analysis of Constraint Satisfaction Problems** [link]
Florent Krzakala and Jorge Kurchan Phys. Rev. E 76, 021122 (2007)

[19] **Gibbs States and the Set of Solutions of Random Constraint Satisfaction Problems** [link]
F. Krzakala, A. Montanari, F. Ricci-Tersenghi, G. Semerjian, L. Zdeborová
Proc. Natl. Acad. Sci. 104, 10318 (2007)

[18] **Temperature and Disorder Chaos in Three-Dimensional Ising Spin Glasses** [link]
Helmut G. Katzgraber, Florent Krzakala Phys. Rev. Lett. 98, 017201 (2007)

[17] **Critical aging of Ising ferromagnets relaxing from an ordered state** [link]
P. Calabrese, A. Gambassi, F. Krzakala J.Stat.Mech.0606:P06016,2006

[16] **Disorder chaos in spin glasses** [link]
F. Krzakala and J.P. Bouchaud Europhys. Lett., 72 (3), pp. 472-478 (2005)

[15] **Spin glass models with ferromagnetically biased couplings on the Bethe lattice: analytic solutions and numerical simulations** [link]
Tommaso Castellani, Florent Krzakala, Federico Ricci-Tersenghi. Eur. Phys. J. B 47, 99 (2005)

[14] **Glassy properties of the Kawasaki dynamics of two-dimensional ferromagnets** [link]
Florent Krzakala Phys. Rev. Lett. 94, 077204 (2005)

[13] **Threshold values, stability analysis and high-q asymptotics for the coloring problem on random graphs** [link]
Florent Krzakala, Andrea Pagnani, Martin Weigt Phys. Rev. E 70, 046705 (2004)

[12] **Nonequilibrium critical dynamics of the ferromagnetic Ising model with Kawasaki dynamics** [link]
C. Godreche, F. Krzakala & F. Ricci-Tersenghi J.Stat. Mech.: Theor. Exp. (2004) P04007

[11] **On temperature chaos in Ising and XY Spin Glasses** [link]
Florent Krzakala Europhys. Lett., 66 (6), pp. 847-853 (2004)

[10] **Energy exponents and corrections to scaling in Ising spin glasses** [link]
J.-P. Bouchaud, F. Krzakala, O.C. Martin Phys. Rev. B 68, 224404 (2003)

[9] **Local excitations in mean field spin glasses** [link]
F. Krzakala and G. Parisi Europhys. Lett., 66 (5), pp. 729-735 (2004)

[8] **Absence of an equilibrium ferromagnetic spin glass phase in three dimensions** [link]
F. Krzakala, O.C. Martin Phys. Rev. Lett. 89, 267202 (2002)

[7] **The secondary structure of RNA under tension** [link]
M. Mueller, F. Krzakala, M. Mezard Eur. Phys. J. E 9, 67-77 (2002)

[6] **Chaotic temperature dependence in a model of spin glasses** [link]
F. Krzakala, O.C. Martin Eur. Phys. J. B 28, 199-209 (2002)

[5] **Nature of the glassy phase of RNA secondary structure** [link]
F. Krzakala, M. Mezard, M. Mueller Europhys. Lett., 57 (5), pp. 752-758 (2002)

[4] **Zero-temperature responses of a 3D spin glass in a field** [link]
F. Krzakala, J. Houdayer, E. Marinari, O.C. Martin, G. Parisi Phys. Rev. Lett. 87, 197204 (2001)

[3] **Discrete energy landscapes and replica symmetry breaking at zero temperature** [link]
F. Krzakala, O.C. Martin Europhysics Letters 53 (6) (2001) 749-755

[2] **Large-scale low-energy excitations in 3-d spin glasses** [link]
J. Houdayer, F. Krzakala, O. C. Martin Eur. Phys. J. B 18, 467-477 (2000)

[1] **Spin and link overlaps in 3-dimensional spin glasses** [link]
F. Krzakala, O.C. Martin Phys. Rev. Lett. 85, 3013 (2000)

- ***Patent***

F. Krzakala, S.Gigan, L. Daudet, Laurent, I. Carron, A. Drémeau, A. Saade
« Digital-data mixing apparatus and digital data processing system »
*European Patent application* **EP15305165** [link]

# List of seminars and conferences (more or less complete)

**2020**

**Berkeley** (USA) October, *invited talk* @ Simons Institute.
**Trieste** (Italy) April, Workshop Machine learning, high-dimensional statistics
**Oberwolfach (**Germany**)** May, Mathematisches Forschungsinsitut Oberwolfach
**Hokkaido (**Japan**)** March, *invited talk* @ Statistics Optimization & Machine Learning Workshop
**London**, January, *invited talk* @ Alan Turing Institute Statistics and computation [video]

**2019**

**NeurIPS'19, Vancouver,** *Invited talk @ the workshop on "Deep learning & Engineering"* [video]
**NeurIPS'19, Vancouver,** December, three papers with *oral & spotlight presentations*
**Lausanne** November, colloquium of the IC department in EPFL
**Paris** November, French-German conference in AI
**San Sebastian** September, *seminar* for in the ELLIS meeting on machine learning
**Istanbul** July, *seminar* in the Workshop on Theoretical Advances in Deep Learning.
**Lausanne** June, *seminar* for the 'theory of neural network' group in EPFL
**New York** April, *invited talk* at the Flatiron institute [video]
**Les Houches** March, *invited talk* at the 4th *Optimization & Statistical Learning* workshop.
**Duke University** March, *seminar* at the physics department
**New York** March, *seminar* @ MaD seminar, NYU Center of Datascience
**Santa Barbara** February, *invited talk* at the KITP institute [video]
**Santa Barbara** January, *talk* at the KITP institute [video]

**2018**

**NeurIPS'18, Montreal,** December, two papers with both *spotlight presentations*
**Trieste**, October *invited seminar* at SISSA
**Rome**, September *invited seminar* at workshop in honour of Giorgio Parisi's birthday
**Banff (Canada)**, *invited talk* at the workshop Spin glass and related topic
**Montreal ICMP** August *invited talk* at the International Conference on Mathematical Physics
**Lausanne** June, *invited lecture* @ ***Bernoulli institute*** *EPFL "Applications of partition function"*
**Beg ROHU** *invited lecture* @ summer school on Statistical Physics of Machine Learning
**STOC'18, LA (USA):** *invited talk* @ Workshop *Comput. Threshold for Average-Case Problems*
**London***, invited talk* @ Workshop on applied machine learning, Imperial College
**Florence***, invited talk* @ Workshop on Computational Pptics
**Paris** *invited talk* at workshop Wendy in IHP
**Duke Lectures series** *Statistical physics of Learning* @ Duke University, USA [course link]

**2017**

**Boulder (CO USA),** August Lectures series *Statistical mechanics, Glasses & Inference* [video link]
**Lausanne, September Lectures series** *Physics, Statistics & Machine Learning* @ EPFL
**San Jose** (USA) June, *workshop at the American institute of mathematics*
**Berkeley** (USA) June, *invited talk* @ Simons Institute.
**Kyoto (Japan), September,** *invited talk @ workshop*
**Paris** March, *invited seminar* for the Smile group
**San Diego** (USA) February *Talk* at Information Theory and Application workshop
**Bangalore** (India) **Lectures series** *Statistical physics of Learning* [course link]

**2016**

**NeurIPS'16, Barcelona,** December, one paper presented
**Duke** November Two *invited seminars* at Duke University, Durham
**Cambridge** September, *talk* at the ITW 2016 conference
**Aalborg** (Danemark) July, *invited Keynote Talk* at **ITWIST2016** [link]
**Frankfurt** July, *invited talk* @ " Phase transitions in discrete structures" Goethe University.
**Paris** July, *invited talk* at the "Journees Claude Shannon" at LINCS

**Paris** May, *invited talk* @ IHP/Microsoft Workshop on *Community detection & Phase Transitions*"
**Berkeley** (USA) May, *invited talk* "Random phase transitions"workshop @ Simons Institute. **[link]**
**NASA** (USA) April 2016 seminar in the quantum theory group in Montain View.
**San Diego** (USA) February *Talk* at Information Theory and Application workshop
**Berkeley** (USA) January *invited talk* at the Bootcamp on "phase transitions" @ Simons Institute.

**2015**

**NIPS 2015, Montreal** December**,** one paper presented
**Lyon** GRESTSI, September ***invited plenary*** *Talk* in Lyon. **[video link]**
**Cargese** (Corsica) September, 2H *invited lecture* at school on random graphes.
**Harvard** (USA) August, *invited talk* at the Conference on Big Data**[video link]**
**Les Houches** (France) June, *12H invited lecture* at Physics school of Les Houches, for the International Doctoral Training in Statistical Physics 2015
**Trieste** (Italy) June, *10H invited lecture* at the International Centre for Theoretical Physics, for the Spring College on the Physics of Complex Systems 2015
**Paris** ENS May, *seminar* in the DI (computer Science department).
**Cargese** (France) May, *invited seminar* at the workshop "Wave physics"
**Paris** (IT) February, *invited talk* at the IHP Workshop "Community detection"
**Berkeley** (USA) February, *invited talk* at the Workshop "Coding theory" @ Simons Institute
**Bardinecchia** (IT) February, *invited talk* at the Workshop "Biological network" Paris (IT)

**2014**

**NIPS 2014, Montreal** December**,** one paper presented
**Paris November, *invited talk* at the IHP Workshop "random matrices"**
**MIT** (USA) August, *seminar*
**Boston** (USA Juin, *talk* at the CCP 2014 conference
**Honolulu** (USA June, *talk* at the ISIT 2014 conference
**Warwick** (UK) May, *invited talk* Phase trans. in discr. structures & comp. problems @EPSRC
**Paris** March , *seminar* at Ecole Centrale.

**2013**

**NIPS 2013, lake Tahoe** December**,** one paper presented
**Paris** November, *seminar* at the APC, Paris
**Paris** November, *invited talk* at the GDR Phenix-ISIS
**Gottingen** November, *invited talk* at the Workshop "Compressive Sensing"
**Sevilla** September, *talk* at the ITW 2013 conference
**Sappuro**, Japan, July, *invited talk* at "Inference, Computation, and Spin Glasses"
**Seoul**, Korea, July, *talk* at the STATPHYS 25 conference
**Lausanne** June, *talk* at the SPARS2013 conference in EPFL
**Vancouver** May, *talk* at the ICASSP 2013 conference
**New york** May, *seminar* at the physics institute in NYU.

**2012**

**Paris** December, talk at the Tomographic Reconstruction Workshop in Paris
**Paris** November, seminar at the institut de Simulation de Jussieu.
**Oldenburg** (Germany) November, seminar in the physics department.
**Rennes** November, seminar in INRIA.
**Allerton** October, talk at the 50$^{th}$ Conference on Communication, Control, and Comp..
**Aspen** (CO USA), August, Workshop in the Center of Physics. seminar
**Los Alamos** (NM USA), August, seminar: Colloquium CNLS in Los Alamos LANL
**Paris** (France), Juin, invited public talk at the Journ´ees "Complexit´e/d´esordre".
**Paris** (France)), Juin, invited talk at Interdisciplinary Workshop on Inference.
**Paris** (France), Juin, seminar at Capital Fund Management.
**Paris** (France), May, invited talk in IHP Disordered Quantum Systems meeting.
**Nancy** (France), May, invited talk at SPLDS 2012.
**Philips Research** (France), April, seminar at the Suresnes department.
**Lyon** (France),March, seminar at the ENS Lyon.

**Saclay** (France),March, seminar at the Service of Astrophysics.
**Saclay** (France),January, seminar Triangle de la physique.

**2011**

**Paris** (France), December, *invited talk* at Unifying concept in glass physics IV.
**Paris** (France),November, *seminar* at ESPCI.
**Rome** (Italy), March, *seminar* at University of Roma La Sapienza.
**Bardonecchia** (Italy) Feb., *invited talk* workshop Stat. phys. complexity, opti. & systems biology.

**2010**

**Tokyo**, November, *invited talk* at the workshop on complex system in Tokyo.
**Harvard** (USA), October, *seminar* Squishy Physics talks.
**Orsay** September, workshop on Statistical physics, complexity, opt. & biological information, talk.
**Hong Kong,** July, STATPHYS 25: Complexity, Computation and Information, *talk*.
**Beijing**(China), July, Beihang University, *invited seminar.*
**Beijing**(China), July, STATPHYS 24 Satellite : Statistical Physics & Computer Science, i*nvited talk*
**Trieste** ICTP, June, *invited talk @* Workshop Quantum Stat. Mech. Computation & Information
**Saclay** (France) , Mai, Ipht, groupe des systemes vitreux *seminar*.
**Los Alamos** (NM USA), April, Condensed matter group *seminar*.
**Los Alamos** (NM USA), April Quantum lunch *seminar*.

**2009**

**Trieste** ICTP, November *seminar* in the Statistical Physics Group.
**Barcelona**, October, *invited talk @* Workshop on Tech. & Challenges from Statistical Physics
**Chicago** (USA), October, seminar in the center of physics.
**Santa Fe** (NM USA), September, *invited talk @* conference of "Physics of algorithms".
**Los Alamos** (NM USA), April, seminar in (CNLS) Los Alamos Nat. Lab.
**MIT Cambridge** (USA), February, visiting scientist in the Cent. Theor. Physics
**Amherst** (USA), February, seminar in the Theoritical physics department

**2008**

**Kyoto** (Japan), November 2008, *invited talk* at the Unifying concept in glass physics.
**Kyoto** (Japan), November 2008, *talk* in the French-Japan meeting at the Yukawa Institute.
**Los Alamos** (NM USA), October 2008, *seminar* in Los Alamos Nat. Lab.
**Santa Fe** (NM USA), October 2008, *seminar* in the Santa Fe Institute.
**Princeton** (NJ USA), October 2008, *seminar* in the center of physics
**Rutgers University** (NJ USA), October 2008, *invited talk* in the DIMACS workshop.
**Los Alamos** (NM USA), October 2008, *seminar* in Los Alamos Nat. Lab.
**Aspen** (CO USA), June 2008, Workshop in the Center of Physics.
**Los Alamos** (NM USA), May 2008, *seminar* in Los Alamos Nat. Lab.
**Stockholm**(Sweden), May 2008, Workshop on Physics and Computation, *invited talk.*
**Beijing**(China), March 2008, Workshop on Collective Dynamics of info. System, *invited lecture.*

**2007**

**Braga**(Portugal), November 2007, Workshop on complex network, invited talk. Kyoto(Japan),
**Kyoto** September 2007, International Workshop on Statistical-Mechanical Informatics, invited talk.
**Genova**, July 2007, STATPHYS 23, poster
**Paris**, June 2007, Summer school on Spin Glasses 2007, invited lecture.
**Zurich**, April 2007, ETH Theory Seminar.
**Lyon**, March 2007, seminar at ENS.
**Paris**, January 2007, Journees de Physique Statistique 2007, at ESPCI, talk.
**Torino**, Januray 2007, seminar in the at ISI.

**2006**

**Koln**, July 2006, seminar in the physics department.
**Paris**, January 2006, Journées de Physique Statistique 2006, at ESPCI, talk.

**2005**

**Lyon**, Novermber 2005, CECAM Tutorial on polymers and colloids
**Luxembourg**, September 2005, School on aging and glassy dynamics, talk+proceedings.
**Leuven**, ITF, September 2005, Random Graph 2005, invited talk.
**Lyon**, CECAM, April 2005, Conference on Monte-Carlo Methods, talk.
**Roma**, Universita La Sapienza, March 2005, seminar.
**Les Houches,** February 2005 Winter School on complex system.

**2004**

**Trieste** (Italie), september 2004 Complex system meeting, *talk*.
**Tokyo** (Japan), July 2004 STATPHYS22 Satelite meeting, *talk*.
**Bangalore** (India), June 2004 Unifying concept in glass physics *invited talk*.
**Nancy**, May 2004 Workshop on Ageing and slow dynamics, *talk*.
**Paris**, May 2004, *seminar* at ESPCI PCT.
**Rome**, La Sapienza, March 2004, *seminar*.
**Paris**, Saclay, CEA Spht, January 2004, CEA Spht, *seminar*.
**Paris**, Orsay, LPT, January 2004, LPT and LPTMS, *seminar*.

**2003**

**Cagliari** (Italia), September, General SPHINX Meeting, *talk*.
**Salerno**, May, Physics department, *seminar*.
**Paris**, LPTL, May, *seminar*.
**Napoli**, April, Physics department, *seminar*.
**Saarbrucken**, MECO 28, March, *talk*.
**Montpellier**, March, *seminar* at laboratoire des verres.
**Les Houches**, March School on complexity, *talk*.

**2002**

**Rome** Complexity meeting, September, poster.
**Marseille** JMC8, August Journées de la matière condensée, *talk*.
**Les Houches,** July Summer school on theoritical physics of aging, *poster+proceedings* [link].
**Rome** SMC, February Unifying concept in glass physics II, *poster*.
**Paris**, February, *seminar* at ESPCI PCT.
**Paris**, January, Journees de Physique Statistique 2002, at ESPCI, *talk*.

**2001**

**Barcelona**, December 2001, *seminar* at Departament de Fisica Fonamental.
**Orsay**, September 2001, *seminar* at LPTMS.
**Il Ciocco (Italia)**, September 2001, General SPHINX Meeting, *talk*.
**Montpellier**, January 2001, Structure et Dynamique des systèmes désordonnés

**XXth century**

**Saclay**, June 2000, The Fifth Claude Itzykson Meeting, *poster*.
**Orsay**, April 2000, *seminar* at LPTMS, Orsay
**Nancy**, February 2000, 25 MECO Meeting, *poster*.
**Paris**, February 2000, Journées de physique statistique 2000, *talk*.
**Trieste** ICTP, September 1999 Unifying concept in glass physics, participant