Well-being in astronomy

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Astrophysics is an exciting subject that attracts many young people.

Many rewards to be had in research in astrophysics:
- intellectual challenge
- interacting with knowledgable and fascinating colleagues
- creativity
- discovering new things
- travel, …..

Discouragement noted in a significant fraction of students & post-docs.

In some, the feelings are tending towards distress.

We have seen that the distress can have terrible consequences.
Recent mental health studies of researchers


Poll of >6000 PhD students (all subjects, varying countries) by Nature

36 % respondents sought help for anxiety/depression caused by PhD

Only 12 % in the 2017 survey (but bias in way the question was posed)

An international survey (Auerbach et al, 2018, *J. Abnorm. Psychol.*, 127, 623) by the *World Health Organisation* found 31% students showed signs of major depression, general anxiety disorder or panic disorder etc, in previous 12 m

Prevalence of mental health issues in post-docs documented but less studied (e.g. https://www.sciencemag.org/careers/2014/07/stressed-out-postdoc


International colleagues starting to talk about these issues (sessions at the EAS meetings, during other national astronomy meetings, https://www.astrobetter.com/wiki/Mental+Health etc)
Understanding the current situation in France

To understand (and subsequently improve) the situation in France, we launched a survey, aimed (not exclusively) at younger colleagues.

Announced via SF2A (National astro.) Newsletter, in French astrophysics laboratories, a couple of Swiss/Canadian institutes and some IN2P3 institutes.

Anonymous survey (French & English) ran from 29th March – 3rd May 2021.

None of the questions were obligatory.

Addressed questions about:

- Work (Favourite aspects, hours worked, external constraints, future plans)
- Colleagues (harassment/discrimination)
- Mental health (before and since working in astrophysics)
- Improvements to be made (suggestions and positive feedback)
- Demographics (age, position, current country, nationality)
Survey results - demographics

276 respondents

~25% French astrophysicists are female (no information on PhD students/post-docs)
Survey results - demographics

Working in:
- France / France: 232
- Elsewhere / Ailleurs: 46

Nationality:
- French / française: 190
- Other / autre: 86
Survey: what do you like most about your job?

- Discovering new things
- Intellectual challenge
- The salary
- Independence
- Interacting with colleagues
- Creativity
- Travelling
- Communicating my discoveries
- The University/academic environment
- Social life
- Knowing skills will be useful for future
- The place where you work
- Flexibility
- Prestige
- International environment
- Supervising students
- Other: Flexibility
- Other:

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**Survey results: hours worked per week**

**Feel external pressure to work outside legal hours?**
- Yes / Oui: 115
- No / Non: 61
- Don’t know / Je ne sais pas: 7

**Should work outside legal hours?**
- Yes / Oui: 85
- No / Non: 3
- Don’t know / Je ne sais pas: 1

**Why long hours? (examples)**
- Be competitive/obtain post
- Like to work more hours
- Can’t achieve work required in legal hours
- Can’t « switch off »
- Expect more work from post-doc/PhDs than permanent staff!
- Most others work outside legal hours, so should I!
Survey results: job satisfaction

Research is the best job that you can have

My work gives me a sense of purpose

I look forward to every day at work

The large majority feel well integrated in their institute

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Survey results: work-life balance

Sufficient sleep most nights?
- Yes / Oui: 171
- No / Non: 96
- Don't know / Je ne sais pas: 8

My life is balanced with respect to work, outside activities and sleep

Satisfied with living conditions?

Satisfied with financial situation?

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Survey results: academic career

The majority felt that:
- the environment in which they work inspires them
- senior colleagues are there for them when needed
- they handle setbacks well

![Pie chart showing satisfaction with career progression]

Planning to stay in academia:

Would stay if guaranteed job:

![Pie chart showing planning to stay]

![Pie chart showing would stay if guaranteed job]

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Recruent difficulites in academia expressed by the respondents:

- **Precarity**
- Geographical instability
- Pressure to publish
- Younger colleagues often feel undervalued
- General disregard for well-being
- Supervisors with (very) poor management skills
- Impossible to compete with child-free colleagues
- Petty, self-supporting networks of mediocre people in positions of power
- No guidelines describing non-academic areas of research
- Bureaucracy
Survey results: harassment & discrimination

Experienced harassment/discrimination in research

- Yes / Oui
- No / Non
- Don't know / Je ne sais pas

26 % reported harassment

Did’t report because:

- Embarrassed / stigma / Gêne / stigmatisation
- Don't feel that someone would listen / Je n'ai pas l'impression que quelqu'un m'écouterait
- Other people have worse problems / D'autre personnes on des problèmes bien pires
- Don't know where to go for help / Je ne sais pas où trouver de l'aide
- Language barrier (I don't speak the local language) / Barrière de langue (je ne parle pas la langue locale)

32 female, 2 male, 0 other

Shaming by a superior or a colleague
Harassment by supervisor/superior
Gender discrimination
Racial discrimination/harassment
Religious discrimination
Age discrimination
Sexual harassment
Disability discrimination
LGBTQ discrimination/harassment
Prefer not to say
Other:
- discrimination based on nationality
- discrimination based on hierarchy
- discrimination due to having kids (or not)
- language discrimination
- discrimination on research subject!
Survey results: mental health issues due to career

20% suffered mental health issues before starting career in astrophysics

~45% suffer with mental health problems since starting in astrophysics

Health issues:

- Depression / Dépression: 80
- Anxiety / Anxiété: 128
- Panic attacks / Crises de panique: 55
- Bipolar disorder / Trouble bipolaire: 1
- Eating/body dismorp.../Trouble de l'alimentation: 11
- Obsessive-compulsiv.../obsessionnel compul...: 6
- Prefer not to say / Je ... répondre...: 3
- Other / Autres: 17

59% have not sought help because:

- Embarrassed / stigma / Gêne / stigmatisation
- Don't feel that someone would listen / Je n'ai pas l'impression que quelqu'un m'écouterait
- Other people have worse problems / D'autre personnes on des problèmes bien pires
- Don't know where to go for help / Je ne sais pas où trouver de l'aide
- Language barrier (I don't speak the local language) / Barrière de langue (je ne parle pas la langue locale)
Problems have caused 51 colleagues (~18% respondents) to turn to:

- Alcohol abuse / abus d'alcool: 23
- Drug abuse / usage de drogues: 8
- Other substance abuse / usage d'autres substances: 2
- Disordered eating / désordre alimentaire: 32
- Self-harm / automutilation: 9
- Attempted suicide / tentative de suicide: 1

None of these are permanent staff.

Colleagues have felt overwhelmed by work:

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Survey results: most positive experiences

Scientific discussions
International connections
Constructive feedback
Supervising
Outreach
Interdisciplinary work
Observing
Great ideas
Learning
Promotions
Accepted proposals
Independance
Sharing success
Working abroad
Publishing work
Meeting people
Changing domains
International recognition
Contribute to big projects

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Outcome and recommendations

- Results presented at the SF2A week of astrophysics (June 2021)
- 4 h workshop also held to discuss the problems, 2nd workshop in June 2022
- Recommendations drawn up for institutes, masters programmes/doctoral schools and governing bodies
- Some recommendations already in place in some institutes
- Seemingly minor improvements can make a big difference

- A lot of help already available, but often not known. Putting in to place a single webpage (via the French astronomy society, SF2A) of all useful help + info
- Created a working group through the SF2A to work on the issues raised
- New, wider survey to be carried out in 2023
Recommendations for institutes

- Provide paperwork in English/help out with translating, hold discussions in English
- Prepare arrival (office, intros, etc), provide information booklets and introductory meetings for new hires on institute/surroundings (opening a bank account, finding an apartment, organisation within institute, access to intranet, mailing lists, etc) in English
- Update available information!
- Organise scientific/non-scientific events to facilitate meeting colleagues and create a team spirit
- Provide (local) mentor programme
- Open discussion of problems (imposter syndrome, well-being, hours worked, racism, sexism, ....) at dedicated coffee/discussion sessions
- Provide information and help for finding jobs outside academia
- Contact with previous-researchers now in industry (alumni prog., PhD day, etc)
Recommendations for masters/doctoral schools

- Provide realistic information during masters about chances of staying in academia
- Reinforce links with industry
- Talk more about bad practice (supervisors requiring replies to emails late at night or at the weekend, long working hours, etc)
- Training during Masters/PhD programmes to take into account the majority of students will not work in academia over the long term
Recommendations for governing bodies

- Post-doc positions could be increased in length (ideally >3 yr)
- Post-doc salaries should be harmonised and provide for salary evolution
- Everyone working in astrophysics should be trained in well-being, harassment, discrimination etc, using online courses with tests, to be passed every x years
- Every institute should have a clearly identified person properly trained to deal with harassment (not direct superior of anyone in the institute) – put into place by INSU

Ultimately, improve the PhD & post-doc (& career) experience
For everyone

Because treating people fairly often means treating them differently.

Equality

Equity
Final words

Many others have had the same experiences as you and can (and would like to) provide support and advice

Please ask for help before you become overwhelmed

Astrophysics is great – but so are many, many other types of jobs!

Look for the best in opportunities and take care!

Thanks to:
Those who helped put the survey together
Those who answered the survey
Those of you who will take on board what is said
Those who will help make everyones lives better in the future
Aswell as Framaforms, Topcat, Excel

We remember our colleagues that departed too soon, your memory will help us strive towards a better tomorrow

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Common problems encountered in research

- Precarity
  - Living away from family (partner/children/parents): removes support network
  - Cultural & administrative problems: paperwork, language barrier (difficulty seeking medical help), insufficient information on institute practices
  - Financial difficulties

- Work-related stress/imposter syndrome: an “internal experience of intellectual phoniness” (or fraud) in some who are highly successful (think it’s due to luck not true abilities)

- Relationship (supervisor, colleagues, …) problems

- (COVID-19-related stress): Loss of motivation, poor internet access, loss of data/experiments/simulations, access to lab./supervisors limited, loneliness

- Harassment / discrimination

« Two-body » problem frequent in academia (e.g. Gagliano Talun, 2021, Nature), affects up to 36% researchers.
# Harassment/Negative Acts

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>Variable of bullying</th>
<th>M±SD</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal related bullying</td>
<td>2) Being humiliated or ridiculed in connection with your work</td>
<td>1.66±0.82</td>
<td>1.42±0.50</td>
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<tr>
<td></td>
<td>5) Spreading of gossip and rumours about you</td>
<td>1.42±0.65</td>
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<td></td>
<td>6) Being ignored, excluded or being 'sent to Coventry'</td>
<td>1.41±0.68</td>
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<td>7) Having insulting or offensive remarks made about your person</td>
<td>1.40±0.70</td>
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<td></td>
<td>(i.e. habits and background), your attitudes or your private life</td>
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<td></td>
<td>8) Being shouted at or being the target of spontaneous anger (or rage)</td>
<td>1.65±0.85</td>
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<td>11) Repeated reminders of your errors or mistakes</td>
<td>1.52±0.74</td>
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<td>12) Being ignored or facing a hostile reaction when you approach</td>
<td>1.41±0.72</td>
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<td>13) Persistent criticism of your work and effort</td>
<td>1.29±0.57</td>
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<td></td>
<td>14) Having your opinions and views ignored</td>
<td>1.45±0.64</td>
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<td></td>
<td>17) Having allegations made against you</td>
<td>1.33±0.56</td>
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<td></td>
<td>18) Excessive monitoring of your work</td>
<td>1.30±0.66</td>
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<td></td>
<td>20) Being the subject of excessive teasing and sarcasm</td>
<td>1.24±0.59</td>
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<tr>
<td>Intimidation related bullying</td>
<td>9) Intimidating behaviour such as finger-pointing, invasion of personal space,</td>
<td>1.21±0.57</td>
<td>1.20±0.41</td>
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<td></td>
<td>shoving, blocking/barring the way</td>
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<td>10)Hints or signals from others that you should quit your job</td>
<td>1.14±0.46</td>
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<td></td>
<td>15) Practical jokes carried out by people with whom you don't get along</td>
<td>1.16±0.46</td>
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<td></td>
<td>19) Pressure not to claim something which by right you are entitled to</td>
<td>1.29±0.67</td>
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<tr>
<td></td>
<td>(e.g. sick leave, holiday entitlement, travel expenses)</td>
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<td></td>
<td>22) Threats of violence or physical abuse or actual abuse</td>
<td>1.19±0.53</td>
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</tr>
<tr>
<td>Work-related bullying</td>
<td>1) Someone withholding information which affects your performance</td>
<td>1.89±0.98</td>
<td>1.75±0.67</td>
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<td></td>
<td>3) Being ordered to do work below your level of competence</td>
<td>1.70±1.02</td>
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<td></td>
<td>4) Having key areas of responsibility removed or replaced with more trivial or</td>
<td>1.60±0.86</td>
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<tr>
<td></td>
<td>unpleasant tasks</td>
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<td></td>
<td>16) Being given tasks with unreasonable or impossible targets or deadlines</td>
<td>1.35±0.66</td>
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<tr>
<td></td>
<td>21) Being exposed to an unmanageable workload</td>
<td>2.21±1.27</td>
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[Source](https://doi.org/10.1111/jkana.2013.19.5.578)
ACADEMIC CONCLUSIONS

**UNACCEPTABLE!!**

Based on a sample size of $n = 1$, we made a generalized conclusion.

**BAD!**

**SEEMINGLY ACCEPTABLE?**

I don't know why students complain so much these days.

I had a great time when I was a grad student.

www.phdcomics.com
Other suggestions: precarity

Limited number of new jobs - but you can maximise chances of being hired:

- Prepare your application with the people in the lab. you want to be hired in
- Demonstrate in the application how you will work with the people in your chosen lab
- Show how you independently conduct research projects
- Prepare your application in advance and get different people to read it (specialist, non-specialist) and provide feedback
- In France, it is not necessary to have a very long list of publications
- Ask a previously successful candidate to show you their application
- In your application, show your contribution clearly (but do not overclaim)
- Stick to the guidelines provided
- Run a spell checker and proof read

Keep an open mind, there are many other fascinating jobs out of academia
Other suggestions: precarity

Permanent research jobs in France:

In France: CNRS / CNAP / University

CNRS, primarily sections 17 & 18, but also 1, 2, 4, 7
University: primarily section 34, but also 35, 28-30, ...

Example for 2021: CNRS section 17 (CR): 5 posts
CNAP (Astronome-adjoint): 5 posts
Lecturer (section 34): 3 posts + 2 (section 29/34, cosmo/astro)

It is also possible to become a Research engineer (IR)

There are also jobs in other countries

Non research jobs: IT, big data, aerospace industry, teaching, public outreach, scientific writing, medical imaging, ... (see list in extra slides)

Remember: moving out of academia does not constitute a failure
Other suggestions: imposter syndrome & stress

- Talk to colleagues, many have felt the same at some point in their career
- Don’t listen to people who tell you: you received this competitive grant/you got your position because you’re a woman (or other minority)...
- Teaching may help for postdocs?

<table>
<thead>
<tr>
<th>4 ways to deal with stress</th>
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<tr>
<th>In the long-term</th>
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<tbody>
<tr>
<td>✓ Exercise regularly</td>
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<td>✓ Eat well</td>
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<tr>
<td>✓ Practice Mindfulness</td>
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<tr>
<td>✓ Practice relaxation techniques</td>
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</tbody>
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<tr>
<th>In the short-term</th>
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<tbody>
<tr>
<td>✓ Take a walk</td>
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<tr>
<td>✓ Practice deep breathing</td>
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<tr>
<td>✓ Use aromatherapy</td>
</tr>
<tr>
<td>✓ Get a hug from a loved one</td>
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<tr>
<th>Home</th>
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<tr>
<td>✓ Express yourself</td>
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<tr>
<td>✓ Take action</td>
</tr>
<tr>
<td>✓ Get organized</td>
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<tr>
<td>✓ Create your own space</td>
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<tr>
<th>Work</th>
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<tr>
<td>✓ Understand the expectations</td>
</tr>
<tr>
<td>✓ Avoid multitasking</td>
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<tr>
<td>✓ Minimize conflict</td>
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<tr>
<td>✓ Get comfortable</td>
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<tr>
<th>Relationships</th>
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<tbody>
<tr>
<td>✓ Remove external stressors</td>
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<td>✓ Get to the root of the problem</td>
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<tr>
<td>✓ Save time for yourself</td>
</tr>
<tr>
<td>✓ Improve your communication skills</td>
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</table>
Other suggestions: harassment

- In academia, recognizing oneself as target of negative behavior is often linked to a sense of shame, personal failure, or at risk for more targeting.

- Culture of silence (slowly changing) remains (anonymous questionnaires reveal ~20-40% of academic personnel have been harassed, and 50% have witnessed it, Keashly 2019)

- Organisation Codes of Conduct are becoming more common

- Positive conflict management practices that include procedures and dedicated committees, ombudspersons. Listening, finding common ground, leading towards collaborative solutions

- Some collaborations/organisations have trained teams (allies) to observe interactions and help identify improvements

- Training and dedicated talks to raise awareness and give all collaboration members the background to create a positive environment

Local resources: Information on posters around the institute +
Where to get help in Toulouse

Obviously, try to avoid letting things overwhelm you. To do that, try to
- keep a balanced life – have an interest outside of work (good for the CV too!)
- get enough sleep
- keep communication open with your hierarchy, the majority really do want the best for you
- if not possible, speak with an intermediary (someone you trust)
- ask for support from family and friends – everyone goes through bad patches and people are willing to help

If things are bad:
- speak to your doctor
- speak to the University/ CNRS support services

CNRS
Preventative medicine, including stress related issues, find your contact here:
http://www.dgdr.cnrs.fr/SST/CNMP/med_prev_serv/annu-serv.htm
http://www.dgdr.cnrs.fr/drh/protect-soc/fiches_rps.htm
Where to get help in Toulouse

University

https://welcomedesk.univ-toulouse.fr/le-service-interuniversitaire-de-m-decine-preventive-et-de-promotion-de-la-sant-simpps

Preventative medicine (some English speaking staff)

- Generalists doctors, Gynecologists, vaccinations
- Social services (help with university, family, personal, administrative & financial problems
- Psychiatrists and psychologists
- Nutritionists, sexologists, doctors to help with addiction

See also resources here:
https://www.astrobetter.com/wiki/Mental+Health
Widening your options, some transferrable skills

- Collaboration
- Statistical methods
- Numeracy
- Programming/coding
- Data management and analysis
- Simulations/Modelling
- Autonomy
- Motivation
- Note taking
- Prioritising
- Resolving problems
- Fluent English (and other languages!)
- Written communication
- Public speaking
- Project management
- Leadership
- Critical thinking
Options open to you….

**Information technology**
- Statistician: Critical thinking, problem solving
  - Collaboration and team leading
  - Mental agility and adaptability

**Big data**
- Researcher: Initiative and entrepreneurial skills
  - Efficient communication
  - Access and analyse information

**Imaging/ Medical techniques**
- Curiosity and imagination

**Scientific Writing/communication**

**Work in the aerospace industry**
- Teacher

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Places actively recruiting PhDs and postdocs

Big groups in Aeronautics/Aerospace
CapGemini (Engineering) (previously Altran) https://www.capgemini.com/fr-fr/
CS Group https://www.csgroup.eu/fr/
ALTEN https://www.alten.com
AKKA https://www.akka-technologies.com
EXPLEO https://www.joinexpleogroup.com

Smaller businesses "fournisseur de service" (Toulouse)
CELAD www.celad.fr
HEDON Technologies https://www.hedonotechnologies.com

Businesses focussed on artificial intelligence :
Elter https://elter.fr/en/home/
Datalab by Extia - https://www.extia.fr/assets/pdf/datalab.pdf
LumenAI (à Pau) http://www.lumenai.fr/
Datactik https://www.datactik.com/
Places actively recruiting PhDs and postdocs

Other subjects:
WeatherForce [https://weatherforce.org/](https://weatherforce.org/)
CLS Group (Collecte Localisation Satellites) [https://www.cls.fr/en/](https://www.cls.fr/en/)
Thales [https://www.thalesgroup.com/](https://www.thalesgroup.com/)

How to get recruited

Make an attractive CV that is oriented towards industry/engineering
Put it on the website APEC (www.apec.fr)