

**Constitution and Bylaws of the
Plasma Science and Applications Committee of the
IEEE Nuclear and Plasma Sciences Society**

Constitution

Article I – Name and Object

Section 1. This organization shall be known as the Plasma Science and Applications Committee (PSAC) of the IEEE Nuclear and Plasma Sciences Society (NPSS), referred to hereafter as the Committee. This elective standing technical committee was formed in 1973.

Section 2. The Committee shall strive for the advancement of the theory and applications of plasma science and of its allied arts and sciences and the maintenance of high scientific and technical standards among its members.

Section 3. The Committee shall aid in promoting close cooperation and exchange of technical information among its members and to this end shall hold meetings for the presentation and discussion of original contributions, shall assist in the publication of the Transactions on Plasma Science and other NPSS publications in our field of interest, and shall otherwise provide for the needs of its members.

Section 4. The Committee shall attempt to provide information on plasma science to those who request it.

Article II – Field of Interest

Section 1. The field of interest of the Committee is plasma science and related technologies and applications. The Committee shall foster publication or other dissemination of original contributions to the theory, experiments, educational methods, and applications of plasma science and to the development of standards. Areas of technical activity will include, but not be limited to, the following:

Section 2.

1. Magnetohydrodynamics
2. Thermionics and plasma diodes
3. Basic plasma phenomena
4. Gaseous electronics
5. Microwave-plasma interaction
6. Electron, ion, and plasma sources
7. Space plasmas
8. Intense electron and ion beams
9. Laser-plasma interactions
10. Plasma diagnostics

11. Plasma chemistry and processing
12. Solid-state plasmas
13. Plasma heating
14. Plasmas for controlled fusion research
15. High energy density plasmas
16. Industrial, commercial, and medical applications of plasma science
17. Plasma waves and instabilities
18. High-power microwave, millimeter-wave, and submillimeter wave generation
19. Pulsed power applications of plasmas

Article III – Membership

Section 1. Members of the Committee are members or affiliates of the NPSS who have indicated a professional interest in plasma science and applications. Only members of the Committee are entitled to vote on Committee matters.

Article IV – Administration

Section 1. The Committee shall be managed by the Plasma Science and Applications Executive Committee (ExCom), consisting of elected members-at-large, plus certain other members as specified herein and in the Bylaws. The number of elected members-at-large shall be 18 members.

Section 2. The terms of office of the elected members-at-large shall be three years. Election of members-at-large shall be held annually to fill vacancies for the coming year. Current members of ExCom, with the exception of those serving partial terms as members-at-large, may not be candidates in elections held during their term of service.

Section 3.

(a) The affairs of the Committee shall be managed by the Chairperson as directed by the ExCom and in accordance with the powers and duties as defined hereunder and in the Bylaws. In the event of the Chairperson's absence or incapacity, these duties shall be performed by the Vice-Chairperson.

(b) The Chairperson shall appoint a Secretary for the Committee. The Secretary need not be chosen from among the elected members-at-large, but should be a member of the Committee.

Section 4.

(a) All directly elected members of ExCom are eligible for election as Vice-Chairperson or Chairperson, subject to the provisions of this Section. In addition, the Vice-Chairperson is eligible for election as Chairperson. The elections for both Vice-Chairperson and Chairperson

shall take place in even numbered years, according to the procedures specified in the Bylaws. The Vice-Chairperson shall be elected by the voting members of ExCom from among the eligible members-at-large of the ExCom to serve a two-year term beginning the following January. In the second year of this term, he or she will be the sole candidate in that year's election for Chairperson. If elected, he or she will become the Chairperson-elect, and become Chairperson the following January. If he or she is not elected, the procedure specified in the Bylaws will be used to select the next Chairperson.

(b) If the position of Vice-Chairperson is vacated at any other time during the two-year term, a replacement Vice-Chairperson will be elected by the voting members of the ExCom from among the eligible members-at-large to complete the remainder of the term. This Vice-Chairperson would then be a candidate to succeed to Chairperson, subject to the approval of ExCom, as prescribed above.

(c) At the conclusion of the term of the Chairperson, he or she shall serve for two years as the Most Recent Past Chairperson. The terms on the ExCom of the Vice-Chairperson, the Chairperson, and the Most Recent Past Chairperson shall automatically extend until they vacate their offices, and during this period they shall be considered full members of ExCom with a vote. No individual may be elected as Chairperson or Vice-Chairperson immediately after completing a term as Chairperson.

(d) In the event that neither the Chairperson nor the Vice-Chairperson is able to take office as prescribed in the Bylaws or if both are incapacitated, or if both offices become vacant for a period greater than 60 days, the ExCom shall promptly elect an Acting Chairperson from among the eligible elected members-at-large to assume the duties of Chairperson until either the Chairperson or Vice-Chairperson takes office or resumes his or her duties. The Most Recent Past Chairperson shall serve as acting Chairperson until ExCom acts.

Section 5. The Chairperson shall be an ex-officio member of all subcommittees of the Committee.

Section 6. The Chairperson, as soon as expedient after election, shall appoint the chairpersons of the subcommittees provided for in the Bylaws. All appointees serve at the pleasure of the Chairperson.

Article V – Nomination and Election of Executive Committee Members-at-Large

Section 1. Nominating procedures shall be as prescribed in the Bylaws and shall include provision for nomination by Committee members.

Section 2. Election of the members-at-large of the Executive Committee shall be as prescribed in the Bylaws.

Section 3. If a member of the ExCom does not complete a term, the vacancy shall be filled at the next regular election for the unexpired portion of the term.

Article VI – Conferences

Section 1. The Committee may hold meetings, conferences, symposia, or conventions, either alone or in cooperation with other organizations, subject to applicable IEEE and NPSS rules and regulations. The primary conference to be held by the Committee shall be the IEEE International Conference on Plasma Science (ICOPS).

Section 2. Meetings, conferences, or conventions sponsored by the Committee shall be open to all members or affiliates of the NPSS. The Committee may not sponsor or cosponsor a meeting that is in any way subject to security clearance.

Article VII – Meetings

Section 1. The ExCom shall meet as required to conduct business and in accordance with the Bylaws.

Section 2. Ten voting members of the ExCom shall constitute a quorum. A member may attend either in person or electronically by any means that allows the member to participate actively in discussions and votes. No member shall have more than one vote for any reason. A member-at-large may appoint a proxy to represent him or her at an Executive Committee meeting. However, such a proxy may not cast a vote.

Section 3. A majority of the legal votes cast by those members of the ExCom attending a meeting shall be necessary for the conduct of its business except as otherwise provided in this Constitution.

Section 4. The business of the ExCom may be handled by correspondence, telephone, or electronic communications (fax, email, etc.) where, in the opinion of the Chairperson, matters requiring prompt action can be adequately handled in that manner. A majority vote of the full ExCom is required to take action in such cases. Telephone actions are to be promptly confirmed in writing by the Chairperson.

Section 5. If the PSAC Chairperson is unable to represent the Committee at a meeting of the NPSS Administrative Committee (AdCom), the Chairperson may designate the Vice-Chairperson as his or her alternate. This alternate shall have the privilege of the floor and may vote on all matters coming before AdCom. The Secretary of the Committee shall submit the name of the

Vice-Chairperson as the designated alternate to the Secretary of the AdCom prior to the start of each calendar year.

Article VIII – Amendments

Section 1. Amendments to this Constitution may be initiated by petition ratified by a two-thirds vote of the ExCom at an ExCom meeting, such petition being submitted to the AdCom of the NPSS for approval, provided that notice of the proposed amendment to the Constitution has been sent to each member of the ExCom at least three weeks prior to such meeting. After such approval, the proposed amendment shall be published in the NPSS News, with notice that it goes into effect unless 20 members of the Plasma Science and Applications Committee object in writing to the President of the NPSS within 60 days of the date of mailing of the notice.

If such objections are received, a copy of the proposed amendment shall be distributed with a ballot to all members of the Committee at least 30 days before the date set for the return of the ballots; the ballots shall carry a statement of the deadline for their return to IEEE Headquarters. When a vote of the entire Committee membership is made necessary, approval of the amendment by at least two-thirds of the ballots returned shall be necessary for its enactment. If approved by Committee members, the proposed amendment will be submitted to the AdCom of the NPSS for approval.

Section 2. As an alternative to the procedure outlined in Section 1 above, amendments to the Constitution may also be initiated by a petition submitted by ten members of the Committee to the Chair or Secretary of the Committee, who shall immediately notify the ExCom of the proposed amendments, and these shall be considered at the next ExCom meeting held at least three weeks following the notice to the ExCom members. If approved by the ExCom, the remaining provisions of Section 1 shall apply. If not approved by the ExCom, the proposed amendment shall be submitted to the membership of the entire Plasma Science and Applications Committee for ratification by ballot as described in Section 1.

Section 3. Committee Bylaws, and amendments thereto, may be adopted by a two-thirds vote of the ExCom at a regularly scheduled meeting, provided that notice of the proposed Bylaw or amendment has been sent to each member of the ExCom at least a week prior to such meeting, or a Committee Bylaw or amendment may be adopted by a two-thirds vote of the members of the ExCom, provided that a 30-day period is allowed for such responses. In either event, the proposed Bylaw or amendment shall be published in the NPSS News. No Bylaw or amendment shall take effect until it has been approved by the AdCom of the NPSS.

Article IX – Periodic Review

Section 1. The Chairperson of the Committee shall appoint a five-person subcommittee every fifth year, starting with January 1, 2019, to evaluate the effectiveness of this Constitution and Bylaws, to study the rules of governance required by the activities of the Committee at that

time, and to amend the Constitution and Bylaws as appropriate for the existing and anticipated needs of the Committee.

Bylaws

1. Executive Committee: Article IV, Section 1 of the Constitution provides that the ExCom shall consist of a number of elected members-at-large plus certain other members. These other members of the ExCom shall be, unless they are already elected members-at-large, the Chairperson of the Committee, the Vice Chairperson of the Committee, the Most Recent Past Chairperson of the Committee, the Secretary of the Committee, and the Editor-in-Chief of the Transactions on Plasma Science. Certain other individuals who are carrying out specific functions or activities are also expected to attend the ExCom meetings, even if they are not voting members of the ExCom. These include the elected AdCom members representing the interests of PSAC, the chairpersons of the Functional Subcommittees, and the chairpersons of the ICOPS to be held in the following two years. In addition, chairpersons of ICOPS to be held more than two years in the future are expected to attend at least one ExCom meeting per year, in order to present a progress report on the preparations for their conferences.

1.1 The voting members of the ExCom shall be the elected members-at-large, the Chairperson of the Committee, the Vice-Chairperson of the Committee, the Most Recent Past Chairperson of the Committee, and the Editor-in-Chief of the Transactions on Plasma Science. The Chairperson of the Committee shall be the Chair of the ExCom.

1.2. The ExCom shall meet at least two times per year, upon dates determined by the Chairperson at least three weeks in advance of the meeting. One of these two meetings shall be held in conjunction with the IEEE International Conference on Plasma Science (ICOPS). Additional meetings may be called at the discretion of the Chairperson or upon request of at least ten voting members of the ExCom with at least three weeks' notice. ExCom meetings are open to visitors, who may be granted the privilege of the floor at the discretion of the meeting's presiding officer or by action of the ExCom. Visitors can also be removed from ExCom meetings at the discretion of the meeting's presiding officer. Should ExCom meet in Executive Session, any visitors present may be asked to leave.

1.3 The last regularly scheduled meeting in the calendar year shall be considered the Annual Meeting of the ExCom.

1.4 In the absence of extenuating circumstances as approved by the ExCom, an elected member-at-large who misses three successive meetings shall automatically be dropped from the ExCom.

2. Nomination and Election of ExCom Members-at-Large: As specified in Article IV, the ExCom shall include 18 members-at-large, each serving a three-year term. Six posts, plus any vacancies occurring in the previous year, are to be filled each year by election of the general membership of the Committee. The terms of office are as listed in Bylaw 5.

2.1 The Nominations Subcommittee of ExCom has principal responsibility to assemble a balanced slate of qualified ExCom candidates reflecting the diversity of PSAC. Nominations may

be made by any member of the Committee by written submission to the Nominations Subcommittee, up until a date fixed each year by the Chairperson of the Committee. Self-nominations are permitted. Eligible members of PSAC can also be added to the ballot by a written petition signed by 25 members of the Committee. Such petitions must be submitted to the Chairperson of the Committee no later than June 1 of the year of the election. The Chairperson of the Committee shall ensure that the number of candidates is at least one and one-half (1.5) times the number of positions to be filled. It is the intent of the Committee to include representation on ExCom from each of the three IEEE Regions outside of North America. Accordingly, in any calendar year for which any of the Regions 8, 9, and 10 have no elected members-at-large carrying over into the following year, the election shall be carried out so as to ensure the election of at least one new member from each of the Regions so affected. In such years, the election ballot shall include at least two Designated Regional Candidates from each such Region, and those Designated Regional Candidates from Regions 8, 9, or 10 shall be identified to the IEEE Headquarters for purposes of administering the election, but not separately designated on the election ballot. However, if a sufficient number of candidates from a Region cannot be found, this provision may be passed over.

2.2 Anyone making a nomination must determine in advance that the nominee is willing to serve if elected. The name, address, e-mail address, and phone number of the nominee must be included, as well as a short biographical statement. In addition, the nomination must provide either the IEEE membership number of the nominee, or a statement that an application for membership in the IEEE and NPSS has been submitted.

2.3 The Nominations Subcommittee shall arrange, before April 1 of each year, for a call for nominations to be conveyed to the whole membership through the NPSS News.

2.4 All nominees must be members of IEEE and NPSS or must have submitted an application for Higher Grade membership in IEEE and NPSS at the time the nomination is forwarded to IEEE Headquarters. Student members and affiliate members of NPSS are not eligible to be nominees for member-at-large.

2.5 The Secretary shall annually arrange for the distribution to the members of the Committee, on or about July 31, of a ballot to elect the candidates to fill member-at-large vacancies on the ExCom. The ballot shall be accompanied by a short biographical statement from each nominee.

2.6 Forty-five days after distribution of the ballots, the IEEE Headquarters shall count and tabulate the votes. In general, those nominees receiving the highest number of votes will be elected. However, in years in which Bylaw 2.1 mandates the designation of Regional candidates from Regions 8, 9, or 10, the ballots shall be counted in a manner determined at the beginning of the election cycle that ensures that at least one of the candidates from each of the affected Regions with at least two members on the ballot is among the six candidates elected to regular 3-year terms. If the election is also being used to fill the remainder of an uncompleted 3-year term, the individual receiving the next highest vote total after determination of the six regular

three-year terms will be elected to that position. In the event of a tie vote by the general membership of PSAC, the individual selected will be determined by a majority vote of the voting members of the ExCom. The tie-breaking vote of the ExCom members shall be conducted by fax or electronic mail by the Secretary of the Committee.

2.7. Following completion of the count, IEEE Headquarters shall report the election results to the Secretary of PSAC, who, in turn, shall notify the Chairperson. The Secretary shall endeavor to obtain the results as far as possible in advance of the Annual Meeting of the ExCom.

2.8. The Chairperson of the ExCom shall submit to the Secretary of the NPSS AdCom the names of the candidates elected to fill the designated vacancies.

3. Functional Subcommittees: The Chairperson of the Committee shall appoint the chairpersons and members of the following Functional Subcommittees:

(a) Membership Subcommittee: To recommend to the ExCom and to implement approved actions to increase PSAC membership.

(b) Site Selection Subcommittee: To identify, encourage, and solicit potential ICOPS sites and conference chairpersons.

(c) Nominations Subcommittee: To identify, encourage, and solicit qualified nominees for ExCom members-at-large.

(d) Minicourse Subcommittee: To identify, encourage, and solicit potential ICOPS minicourses.

(e) Awards Subcommittee:

i.) To identify, encourage, and solicit PSAC member candidates for various IEEE awards, including the Plasma Science and Applications Award and the Igor Alexeff Outstanding Student in Plasma Science Award (see Bylaw 11).

ii.) To work with the ICOPS Conference Chair to identify a chair for the conference awards committee, as well as to provide assistance as needed for selecting the judging panel, establishing the selection process, and providing the awards certificates.

(f) Employment and Careers Subcommittee: To operate an ICOPS job placement center and coordinate conference activities for students and Young Professionals.

(g) Student Travel Grants Subcommittee: To work with the ICOPS conference chair to administer conference student travel grants.

(h) Conference Budget Subcommittee: To review proposed conference budgets prior to approval by the ExCom.

(i) Publicity Subcommittee: To generate articles for the NPSS News.

The Chairperson may authorize additional ad hoc subcommittees if deemed necessary for the efficient functioning of the ExCom.

3.1 The terms of office of chairpersons of the Functional Subcommittees shall be one year.

3.2 The chairpersons of the Functional Subcommittees must be members of the Committee.

3.3 Chairpersons of Functional Subcommittees shall nominate additional members for their subcommittees. To facilitate smooth transition of functional subcommittee leadership, each subcommittee should have at least two elected members-at-large, the second member with a term of office expiring after that of the subcommittee chair. All members-at-large are expected to serve on Functional Subcommittees.

3.4 Each of the Functional Subcommittees shall submit a written report of its activities to the ExCom prior to or at the Annual Meeting.

4. Ballots: Ballots intended for all members of the Committee shall be prepared by the Secretary at the direction of the Chairperson. No ballot shall be counted unless it is unambiguously marked by a qualified Committee member to indicate his or her choice and sent in a sealed envelope bearing the voter's name on or before the specified deadline date or is transmitted by other secure voting means as IEEE may provide. The distribution and counting of ballots issued to all members of the Committee shall be entrusted to IEEE Headquarters. The Secretary of the Committee shall report the results to the ExCom at their next regular meeting.

5. Beginning of Terms of Office: All terms of office of elected members-at-large of the ExCom shall begin January 1 of the year immediately following their election, with the exception of those elected to partial terms, who shall begin serving immediately upon notice of their election.

6. The Chairperson of the Committee and the Nominations Subcommittee shall actively encourage the broadest possible representation from throughout the plasma science community on the ExCom and in its activities.

7. The Editor of the Transactions on Plasma Science and the Editorial Board shall strive to ensure that publication of papers in the Transactions depends only upon the technical merit of the paper, and not upon the financial condition of the author.

8. The Chairperson and Vice-Chairperson of the Committee shall be elected by written ballot at the Annual Meeting in even-numbered years, in accordance with Art. IV, Sect. 4 of the Constitution. The ballot shall indicate two choices for Chairperson: 1) the current Vice-

Chairperson, and 2) an indication that an open election is desired. Additionally, the ballot shall contain a slate of candidates for Vice-Chairperson.

8.1 Nominations and seconds for Vice-Chairperson shall be solicited by the Chairperson at least two months prior to the Annual Meeting in even-numbered years, and the Chairperson shall accept nominations and seconds up to one month prior to the Annual Meeting. The Secretary shall send written ballots to all voting members of the ExCom at least three weeks prior to the Annual Meeting. The marked ballots shall be sent or delivered in person to the Secretary prior to the beginning of the Annual Meeting. The Chairperson shall designate tellers to verify and count the ballots during the Annual Meeting.

8.2 Should the Vice-Chairperson fail to receive a majority of the ballots cast to succeed to Chairperson, then ExCom shall itself determine a new slate of candidates for Chairperson and vote at the Annual meeting. If the newly elected Vice-Chairperson is subsequently elected to become the next Chairperson, then ExCom shall also determine a new slate of candidates for Vice-Chairperson and vote on that position at the Annual meeting.

8.3 In any event, should no candidate receive a majority of the votes cast for Vice-Chairperson, runoff elections shall be conducted by secret ballot at the Annual Meeting between the candidates receiving the two highest numbers of votes until one candidate receives a majority of the votes cast.

8.4 The terms of office of the Chairperson and Vice-Chairperson shall begin January 1 of the year following their election.

9. The IEEE International Conference on Plasma Science: The chairperson of an ICOPS must be a member of the Plasma Science and Applications Committee. The ICOPS Chairperson and the ICOPS site are selected by the ExCom from proposals brought forward by the Site Selection Subcommittee. The ICOPS Chairperson shall follow IEEE, NPSS, and ExCom guidelines for the conference. The Conference Chairperson is responsible for the budget of the conference and determines the registration fees to be charged, subject to approval by the ExCom and the NPSS. He or she shall appoint the members of the Organizing Committee and the Program Committee, with the Treasurer and Technical Program Chair subject to approval by the ExCom. At least one former chairperson of an ICOPS shall be included on the Organizing Committee. The ICOPS Chairperson shall also present a list of Technical Area Coordinators (TACs) to the ExCom for approval no later than the Annual Meeting 18 months prior to the conference and a list of Session Organizers (SOs) to the ExCom for approval no later than the ExCom meeting 12 months prior to the conference. These two lists shall not include individuals who have served consecutively in the same capacity for the 3 prior ICOPS. Additionally, the ICOPS Chairperson shall appoint a conference awards committee, which shall be responsible for selecting the winners of the two ICOPS Outstanding Student Paper Awards as well as the two honorable mention certificate awards. Any minicourse offered must be submitted for approval to the ExCom and should follow the ICOPS Minicourse Guidelines. The ICOPS Chairperson shall have

full authority over the management and technical content of the conference, subject to the oversight of ExCom.

10. Open Business Meeting of the Committee: An annual open Business Meeting of the Committee shall be held in conjunction with ICOPS.

11.1 The Plasma Science and Applications Award: To recognize outstanding individual contributions to the field of Plasma Science, the Committee presents a Plasma Science and Applications Award at the ICOPS. Primary consideration will be given to the impact of the research or new applications. Other factors can include research contributions over a career, influence on plasma science through teaching, professional service to PSAC and to the plasma science community, and any other information the Awards Selection Subcommittee wishes to consider. The Award consists of a monetary award and a plaque. Changes in the Award amount must be approved by AdCom and the appropriate IEEE committee. The recipient shall be invited to deliver an address at the ICOPS in the year of the Award and to submit the text of the talk for an invited paper in the Transactions on Plasma Science. Publicity announcing the recipient shall appear in appropriate NPSS publications.

11.2 The Igor Alexeff Outstanding Student in Plasma Science Award: To recognize outstanding contributions by a student to the field of plasma science and technology, the Committee presents an Igor Alexeff Outstanding Student in Plasma Science Award at the ICOPS. Nominees shall be judged according to their contributions to plasma science. The judgment will be based on quality of research contributions, quality of educational accomplishments, and quality and significance of publications and patents. The Award consists of a monetary award and a plaque, with the award money included in the ICOPS budget. Publicity announcing the recipient shall appear in appropriate NPSS publications.

11.3 Nomination forms for the following year's awards shall be made available on the NPSS website. A nomination for the Plasma Science and Applications Award must be endorsed by three current IEEE members. Any person except a current voting member of the ExCom or a previous recipient of the same award is eligible for these awards. Nominations are submitted to the Chairperson of the Awards Subcommittee, who shall distribute nomination materials to the voting members of the ExCom at least one month prior to the Annual Meeting. The winner of each of the awards shall be chosen by the Awards Selection Subcommittee, which is comprised of the ExCom voting members and chaired by the Committee Chairperson. A closed meeting of the Subcommittee shall be held following the adjournment of the Annual Meeting. For each award, up to three secret ballots may be taken, with the selection of the Plasma Science and Applications Award winner requiring the vote of at least $\frac{3}{4}$ of the Subcommittee present, but no fewer than six votes, while the selection of the Igor Alexeff Outstanding Student in Plasma Science Award shall be made by a simple majority vote. If no winner is selected by the end of three ballots, for either award, a vote will be taken to determine if the voting process should continue, or if the award should be skipped for that year. If the majority votes to proceed, a fourth ballot will be taken using an instant runoff voting procedure requiring a simple majority, in which each voter shall rank the candidates numerically on the ballot, beginning with the

number one for the first choice, and runoff counts of the nominees shall be conducted in rounds. If, in any round, no candidate receives a majority of the votes cast, the candidate (or candidates, if there is a tie) with the fewest number of votes shall be eliminated and the remaining candidates shall advance to the next round. In each round, a voter shall be considered to have cast one vote for the candidate the voter ranked highest on the ballot who has not been eliminated in a previous round. During the instant runoff process, the Chairperson shall only vote if needed to break a tie. If no agreement of the Subcommittee can be reached, or if no candidates are nominated for an award, the award shall be skipped for that year. In the event that the award selections cannot take place as specified above, the award process may take place in a conference call presided over by the Committee Chairperson, provided that at least one week's notice is given of the time of the call and that a majority of the Subcommittee take part. In this case, the winner shall be determined using the instant runoff procedure, as described above, with the Chair voting only if needed to break a tie.

12. The Secretary shall maintain a permanent record of the minutes of past meetings on a password-protected section of the NPSS web site and shall make the password available to ExCom members. The Secretary also shall ensure that current copies of the Constitution and Bylaws are available on the NPSS web site.

November 12, 2021