

Team Neutrino

FIRST Robotics Team #3928

Chairman's Essay

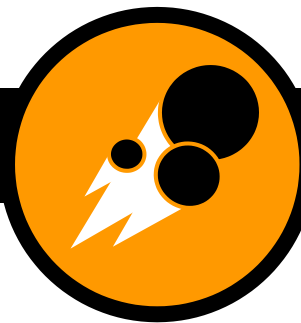
2015

Born from violent astrophysical events like exploding stars and gamma ray bursts, neutrinos are tiny, nearly massless particles that travel close to light speed. They're fantastically abundant in the universe and move as easily through lead as humans move through air. According to PBS Newshour, neutrinos are small, but sensational, and have significant impact resulting in new, sustainable technology. FRC 3928 Team Neutrino embodies these qualities through outreach and team spirit, and most importantly, by ensuring all achievements are student-driven.

SENSATIONAL

Neutrinos are one of the universe's essential ingredients and play a role in scientists' understanding of some basic questions in physics. 3928's effect on the community is as sensational as neutrinos' are in the scientific community. They provide opportunities for students and increase the recognition of FIRST. Spreading FIRST around the community is one of 3928's top priorities. The team showcased at multiple fairs, such as the Science Center of Iowa's (SCI) first ever mini-maker faire, Edwards Elementary Science Night, and the Iowa State Fair. 3928 represented 4-H at the Story County Fair, and to thank the program for their support, the team built cabinet doors for their office. This enabled new members to gain hands-on machining skills crucial to building a robot while concurrently giving back to 4-H.

The team participated in Ames' 4th of July parade. This event introduced FIRST to thousands of people, and was particularly important because it was Ames' 150th anniversary. Later that month, 3928 displayed their robot at the American Solar Car Challenge, which raced through Ames. Reaching more than 14,000 people in a day, this event caused visibility to skyrocket. Lane, who hadn't heard about robotics, came and couldn't believe high school students built the robot in under six weeks. He is now a member, which reinforces 3928's sensational effect beyond FIRST.



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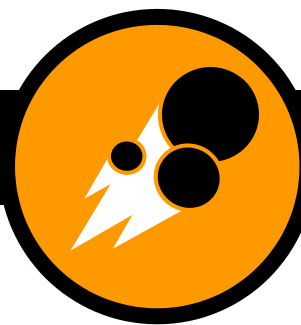
SIGNIFICANT

Despite their size, neutrinos have a significant impact and importance to the scientific community. 3928 has the same significance in the FIRST community. In 2012, they started a summer camp to teach 3rd-8th graders how to build and program an NXT robot. The goal is to inspire students, involve them in FIRST, and start them on a path to become leaders in STEM. The program was so successful that it doubled in size by 2013. They taught the class again in 2014, and this June, the program will expand to have four additional sections.

The team's outreach with Story County FLL is a mutually beneficial relationship. Since their rookie year, 3928 has emphasized work with FLL, volunteering for and mentoring with 20 teams over the past four years. This year, they closely mentored five FLL teams, resulting in success the program has never experienced before. 3928 works extensively with Iowa FLL, volunteering as judges, referees, and many other positions on tournament day. They also built 8 field kits at the beginning of this year. Noting the success of FLL in Ames, 3928 expanded the FIRST progression of programs by starting Club Proton, 3 all-girls Jr. FLL teams, at a maker-space equipped elementary school. Led by 3928, the girls will learn basic problem-solving, programming, and design.

SUSTAINABLE

In November 2012, American scientists used a particle accelerator to send a neutrino message through 780 feet of rock with future research enabling longer distance communication. According to PhysicsWorld.com, current research recognizes neutrinos as a sustainable, powerful new mode of communication. 3928 is as sustainable and effective as neutrinos are proving to be and a major contribution to the team's sustainability is the progression of programs implemented in Ames. To increase the impact of FIRST, 3928 keeps FLLers and now Jr. FLLers involved in FIRST through high school. For FLLers now on 3928, transitioning to FRC kept their passion for STEM alive and 100% of alumni, in part through FIRST, pursue higher education.



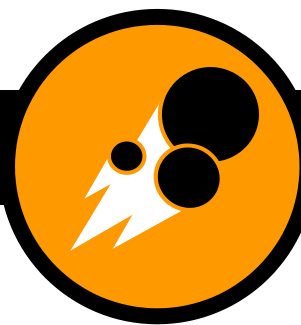
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Integral to 3928 is their community impact. Because 3928 has such a positive reception, all of the outreach activities since the formation of the team have been retained and expanded, and new events are added every year. The team has doubled in size twice in four years, and 3928 continues to introduce new members through: promotional materials and booths at Ames High School, event demonstrations, and strong social media. One team member, Tianxin, moved to Ames this year. Before moving, one of her friends found 3928's website and told her to join, and after attending a meeting, she knew this was something that she wanted to be involved in and has loved it since. When Tiffany first joined the team, she didn't know how she would fit in. Not mechanically inclined, she was afraid to be dead weight. After joining, she "realized that everyone on the team was fabulous at integrating new members and teaching their skills." Most surprising to Tiffany was that her social media skills were relevant to robotics.

3928's sponsors and partners are well recognized on their website and promotional materials and they are closely connected with the team. Several partnerships recently expanded, most notably the relationship with Iowa State University (ISU). With the opening of a new Research & Development building, the team received more workspace. 3928 demonstrated their robot at the building's dedication which increased their visibility to supporters involved with the new space. Many professors are involved with the team by coming weekly to check on the team's progress. In addition to partners, 3928 develops professional relationships with businesses and community members who provide team support. To allow companies like Quality Manufacturing to see what they enable the team to achieve, 3928 also regularly visits their sponsors.

The team runs as a small business, knowing they cannot produce a well-developed product (robot) without sufficient funding and support. 3928 maintains robust standards to contact and work with supporters through monthly newsletters, thank you visits, and detailed documentation of sponsors through internal team organization. 3928 has the resources, dedication, and plans to sustain and further expand the team for future positive impact to Ames and its surrounding community. Sponsors, mentors,



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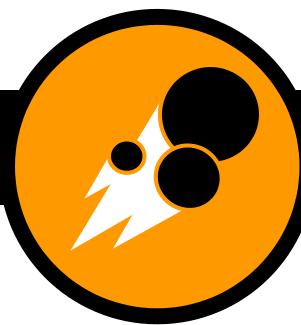
and the community believe in and inspire 3928 to achieve their full potential, and we encourage others to do the same.

SPIRITED

Once thought to be the fastest-moving particle, neutrinos are extremely active and spirited. 3928 lives up to their name through resilience and recognizability. Strong branding standards are integral to the team and are included in all promotional materials like powerpoints, business cards, newsletters, and the business plan. The business plan documents 3928's team structure, goals, finances, outreach, SWOT analysis, and action plans. There is a great knowledge of goals and progress throughout the season, explained and documented in the business plan.

Another prominent characteristic of 3928 is their resilience and ability to bounce back from problems. The team started in 2011 and first competed in 2012. During their rookie year, partner Ames High School functioned as the primary workspace. Unfortunately, the school was unable to continue the partnership but 3928's positive attitude and dedication secured a new partnership with ISU, allowing access to Boyd Lab's machine shop. Their ability to overcome hardships with a smile formed the team that exists today. The next year, the team had two competitions and applied the knowledge gained from the first competition to rank 1st at the second. In 2014, the team qualified for the World Championships. Each year has brought more success; 3928 is determined to make 2015 the most successful season yet!

Gracious professionalism expresses how teams should interact with themselves and others. This attitude of care and respect is vital outside of FIRST. 3928 is well-regarded and recognized in both the local and FIRST communities for a strong reputation and personality. They value teamwork and the path to the solution above winning. The team is personable, approachable, and remembered for their cohesion and collaboration.



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STUDENT-DRIVEN

"I will let you fail," is one of the first things lead mentor Tony Milosch tells new team members. Integral to 3928's character is that the team is absolutely student-driven. Students do the work, and mentors ensure it is happening constructively. Students decide what they need and are the point of contact for getting it, whether through sponsors or purchasing materials online. Students are encouraged to get the most out of FIRST.

Current co-captain Dagney "gained valuable experience from leading the business sub-team and contacting sponsors and job shadowed the special events manager at the Science Center of Iowa." She hopes to get a part-time job there this summer.

Alumni Rachael "started out in the business side of the team, but got a taste of what the mechanical aspect was like, realized it was a better fit, and enjoyed participating in FIRST much more."

Team member Evan "learned about machines and their uses, working with others, and how to grow as a person, engineer and programmer." To this day he learns at every FRC meeting.

These experiences complement what students learn in the classroom and provide a stepping stone to future careers.

But according to arstechnica.com, perhaps neutrinos' strangest property is that they don't necessarily finish their travels with the same identity that they started with. Team Neutrino transforms separate individuals into a team of students and supporters dedicated to ensuring the success, sustainability, and education of STEM through FIRST. From huge events to bonding with individual FIRST teams, 3928's impact is far-reaching and has significantly impacted the community.