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SLIP OPINION NO. 2020-OHIO-3253

THE CITY OF BROOK PARK, APPELLEE, v. RODOJEV, APPELLANT.

[Until this opinion appears in the Ohio Official Reports advance sheets, it may be cited as *Brook Park v. Rodojev*, Slip Opinion No. 2020-Ohio-3253.]

Traffic offenses—Speed-measuring devices—Necessity of expert testimony or judicial notice—Sufficiency of the evidence—Results of speed-measuring device using either radar or laser technology are admissible in court without expert testimony establishing, or court taking judicial notice of, the reliability of the scientific principles of that technology—Factfinder must still determine whether evidence presented concerning accuracy of speed-measuring device and qualifications of person who used it is sufficient to support conviction based on the device’s results—Court of appeals’ judgment affirmed.

(No. 2019-0056—Submitted January 28, 2020—Decided June 10, 2020.)

CERTIFIED by the Court of Appeals for Cuyahoga County,
No. 106313, 2018-Ohio-5028.

SYLLABUS OF THE COURT

The results of a speed-measuring device using either radar or laser technology are admissible in court without expert testimony establishing, or the court taking judicial notice of, the reliability of the scientific principles of that technology. However, the factfinder is required to determine whether the evidence presented concerning the accuracy of the particular speed-measuring device and the qualifications of the person who used it is sufficient to support a conviction based on the device's results. (*E. Cleveland v. Ferrell*, 168 Ohio St. 298, 154 N.E.2d 630 (1958), approved and followed.)

STEWART, J.

{¶ 1} In this certified-conflict case following a judgment of the Eighth District Court of Appeals, we consider whether the results of a speed-measuring device using either radar or laser technology are admissible in court without expert testimony establishing, or the court taking judicial notice of, the reliability of the scientific principles underlying that technology. We answer that question in the affirmative, but we hold that the factfinder is required to determine whether the evidence presented concerning the accuracy of the particular speed-measuring device used and the qualifications of the person who used it is sufficient to support a conviction based on the device's results.

Facts and Procedural History

{¶ 2} On May 17, 2017, a city of Brook Park police officer issued appellant, Joseph G. Rodojev, a traffic citation for driving his vehicle 15 miles per hour over the posted speed limit in violation of Brook Park Code of Ordinances 333.03. The officer calculated Rodojev's speed using the LTI 20/20 TruSpeed S laser speed-detection device. Rodojev pleaded not guilty in the Brook Park Mayor's Court and

his case was transferred to the Berea Municipal Court.¹ During Rodojev's bench trial, the trial court admitted into evidence and considered the results of the laser speed-measuring device without expert testimony establishing the reliability of the scientific principles underlying the device's technology. The trial court did not specifically take judicial notice of the device's reliability. The court convicted Rodojev of the charged offense.

{¶ 3} Rodojev appealed his conviction to the Eighth District Court of Appeals and raised an assignment of error challenging the trial court's admission of the results of the laser speed-measuring device without expert testimony establishing the scientific reliability of the technology.

{¶ 4} After reviewing Rodojev's argument under the plain-error standard of review because Rodojev did not make an objection in the trial court based on the reliability of the device, the Eighth District affirmed Rodojev's conviction. 2018-Ohio-5028, ¶ 1, 10, 25. Citing this court's decision in *E. Cleveland v. Ferrell*, 168 Ohio St. 298, 154 N.E.2d 630 (1958), the Eighth District determined that expert testimony establishing the reliability of the scientific principles underlying laser-speed-measuring-device technology is not required for a court to admit into evidence the results indicated by such a device. *Id.* at ¶ 23. The court reasoned that laser speed detection works on the same scientific principles as radar speed detection, which we deemed scientifically established in *Ferrell*. *Id.* And challenges based on whether the device involved in a particular case had been properly maintained or used, and challenges based on the qualifications of the person who used the device, involve the sufficiency and weight of the evidence, not its admissibility. *Id.* at ¶ 10, 24.

1. The Berea Municipal Court "handles cases from the municipalities of Berea, Brook Park, Middleburg Heights, Olmstead Falls, Olmstead Township, Strongsville, and The Metro Parks." City of Berea, *Berea Municipal Court*, cityofberea.org/302/Berea-Municipal-Court (accessed June 5, 2020) [<https://perma.cc/N2SE-HW5R>].

{¶ 5} Recognizing that this court had not yet determined whether the results of a laser speed-measuring device are admissible without expert testimony establishing, or the court taking judicial notice of, the reliability of the scientific principles underlying the technology, the Eighth District certified that a conflict existed between its decision in this case and the decisions of the courts of appeals in *State v. Cleavenger*, 2018-Ohio-446, 93 N.E.3d 1027, ¶ 34 (7th Dist.), and *In re Z.E.N.*, 4th Dist. Scioto No. 18CA3826, 2018-Ohio-2208, ¶ 19-24. *Id.* at ¶ 27.

{¶ 6} This court determined that a conflict existed and ordered the parties to brief the following issue:

“Whether the results of any speed measuring device, using either radar or laser technology, [are] admissible without expert testimony establishing, or the taking of judicial notice of, the scientific reliability of the principles underlying that technology.”

2019-Ohio-768, 154 Ohio St.3d 1520, 118 N.E.3d 257, quoting 2018-Ohio-5028 at ¶ 27.

Analysis

{¶ 7} Rodojev urges this court to answer the certified question in the negative, reverse the judgment of the court of appeals, and hold that sufficient proof of the reliability of the scientific principles underlying laser speed-measuring devices is required in each case, either through expert testimony or judicial notice under Evid. R. 201. He argues that if we permit the admission of the results of a laser speed-measuring device into evidence without that foundation, no proof of reliability will be required respecting the most vital evidence in speeding-offense cases.

{¶ 8} We disagree with Rodojev and note from the outset that other than his challenge to the admissibility of the test results, he has not argued or presented any

evidence suggesting that the reliability of the scientific principles underlying laser speed-measuring devices is invalid or even suspect. However, as the Eighth District noted in its decision, this court has not addressed the reliability of the scientific principles underlying radar speed-measuring devices since 1958 when we decided *Ferrell*. See 2018-Ohio-5028 at ¶ 26. We additionally note that we have not addressed the admissibility of the results of laser speed-measuring devices based on the reliability of the scientific principles underlying the technology.

Radar Speed Devices

{¶ 9} In *E. Cleveland v. Ferrell*, this court took judicial notice of the reliability of the scientific principles underlying stationary radar speed-measuring devices. 168 Ohio St. at 303, 154 N.E.2d 630. British physicist James Clark Maxwell began experimenting with radar, the letters of which stand for “radio detection and ranging,” in the 1860s. Ryan V. Cox & Carl Fors, *Admitting Light Detection and Ranging (LIDAR) Evidence in Texas: A Call for Statewide Judicial Notice*, 42 St. Mary’s L.J. 837, 842-843 (2011). Radar works on the principle of bouncing radio waves traveling at the speed of light off a reflective object at a fixed frequency. *Id.* at 842. Radar uses long wavelength light from the radio portion of the electromagnetic spectrum. Daniel Y. Gezari, *Use of Lasers in Speed Measurement*, in 1 Campbell, *Defense of Speeding, Reckless Driving and Vehicular Homicide*, Section 9a.02 (2020). Radar speed-measuring devices send out a continuous beam of waves at a fixed frequency.² *Ferrell* at 300. When the waves are intercepted by a moving object, the frequency of the waves changes “in such a ratio to the speed of the intercepted object that, by measuring the change of frequency, the speed may be determined.” *Id.* This is known as the “Doppler

2. The frequencies used by police for radar speed-measuring devices are established and maintained by the Federal Communications Commission (“FCC”). Law-enforcement agencies purchase radar speed-measuring devices that are built to operate at the frequencies dictated by the FCC. Cox & Fors, 42 St. Mary’s L.J. at 843.

effect”—a common example of which is the change in pitch that can be heard when a vehicle with its horn or siren sounding passes the listener. *See id.*

{¶ 10} By the time this court decided *Ferrell*, the Doppler effect had been used for nearly a century to calculate the speed of moving objects. *Id.* Thus, we held in *Ferrell* that the results of radar speed-measuring devices are admissible without expert testimony, just as photographs, X-rays, electroencephalographs, and speedometer readings had been deemed admissible without expert testimony. *Id.* at 303. However, we determined that the sufficiency of the evidence regarding the accuracy of the device and the qualifications of the person who used the device remained matters to be considered by the factfinder on a case-by-case basis. *Id.*

{¶ 11} Sometime after this court’s decision in *Ferrell*, law-enforcement officers began using moving radar speed-measuring devices. *Cleavenger*, 2018-Ohio-446, 93 N.E.3d 1027, at ¶ 13. In *Cleavenger*, the Seventh District held that pursuant to this court’s decision in *Ferrell*, the results of radar speed-measuring devices (Doppler devices), whether the device was stationary or moving, are admissible without expert testimony on the reliability of the scientific principles involved in the technology. *Id.* at ¶ 34.

{¶ 12} Like stationary radar speed-measuring devices, moving radar speed-measuring devices also operate using the Doppler effect, but moving radar speed-measuring devices are usually mounted inside of the police vehicle and can be used while the police vehicle is moving. *Cox & Fors*, 42 St. Mary’s L.J. at 842-843, 846; *see also Cleveland v. Tisdale*, 8th Dist. Cuyahoga No. 89877, 2008-Ohio-2807, ¶ 16. Differences in the devices include that a moving radar speed-measuring device must compensate for the speed of the police vehicle in relation to the vehicle it is tracking. *See State v. Wilcox*, 40 Ohio App.2d 380, 383-384, 319 N.E.2d 615 (10th Dist.1974). And rather than tracking an individual vehicle, a moving radar speed-measuring device usually tracks the fastest moving object within its range.

Cox & Fors, 42 St. Mary's L.J. at 846. Because of this, the officer must visually determine which vehicle within the device's range is traveling the fastest. *Id.*

{¶ 13} Both of these differences are device-specific and still require the factfinder to determine whether the evidence presented concerning the accuracy of the device and the qualifications of the person who used it is sufficient to support a conviction based on the device's results. *See Ferrell*, 168 Ohio St. at 303, 154 N.E.2d 630. But neither difference calls into question the reliability of the scientific principles underlying radar speed-measuring technology: when radio waves are intercepted by a moving object, the frequency of the waves changes "in such a ratio to the speed of the intercepted object that, by measuring the change of frequency, the speed may be determined." *Id.* at 300. Accordingly, we approve and follow our decision in *Ferrell* that the results of a radar speed-measuring device may be admitted into evidence without expert testimony establishing the reliability of the scientific principles underlying the technology. *Id.* at 303.

Laser Speed Devices

{¶ 14} In *In re Z.E.N.*, the Fourth District determined that for a defendant to be convicted of a speeding offense based on the results of a laser speed-measuring device, there must be sufficient evidence presented at trial showing that the device is scientifically reliable. 2018-Ohio-2208 at ¶ 18. It further determined that the scientific reliability of a speed-measuring device can be established through expert testimony or judicial notice. *Id.* The court determined that the state had failed to present sufficient evidence of the laser speed-measuring device's reliability to support the defendant's speeding conviction. *Id.* at ¶ 23-24.

{¶ 15} Laser, the letters of which stand for "light amplification by stimulated emission of radiation," was first theorized by Albert Einstein in 1917 and finally developed by American physicist Theodore Maiman in 1960. Cox & Fors, 42 St. Mary's L.J. at 848. Laser speed-measuring devices were first offered

for use to law-enforcement officers in 1991.³ *Id.* Different from the longer wavelength light used by radar devices, a laser device uses shorter wavelength light from the infrared portion of the electromagnetic spectrum. *Id.* at 849.

{¶ 16} Laser speed-measuring devices transmit a series of very short pulses of infrared light in a very narrow beam. Gezari, *Use of Lasers in Speed Measurement*, at Section 9a.02. The pulses of light reflect back from the vehicle and are detected by an infrared sensor in the device. *Id.* The device records the time it takes for each pulse, traveling at the speed of light, to reach the vehicle and return to the device, and it calculates the distance to the vehicle using the travel time and constant value of the speed of light. *Id.* The device makes multiple distance measurements in a fraction of a second. *Id.* It then calculates the speed of the vehicle from the distance and time data it gathered using the formula: velocity = distance ÷ time. *Id.*

{¶ 17} We are satisfied that the scientific principles underlying laser speed-measuring devices are sufficiently reliable and hold that the results of a laser speed-measuring device are admissible in Ohio courts without expert testimony establishing their reliability or the court taking judicial notice of the scientific principles underlying that technology. Our decision on this issue is in accordance with decisions from courts in several other states. *See, e.g., Goldstein v. State*, 339 Md. 563, 576-577, 664 A.2d 375 (1995); *People v. Mann*, 397 Ill.App.3d 767, 772, 922 N.E.2d 533 (2010); *State v. Williamson*, 144 Idaho 597, 600, 166 P.3d 387

3. The National Highway Traffic Safety Administration and the International Association of Chiefs of Police test and approve radar speed-measuring devices in accordance with United States Department of Transportation standards and publish their findings in a Conforming Product List (“CPL”). Cox & Fors, 42 St. Mary’s L.J. at 847. Although state and local law-enforcement agencies are not required to purchase devices listed on the CPL, only devices on the CPL are eligible for purchase using federal Highway Safety Grant Program funds. National Highway Traffic Safety Administration, *Conforming Product List* (Jan. 20, 2020), https://www.nhtsa.gov/sites/nhtsa.dot.gov/files/documents/combined_cpl_january_20_2020_portrait_format.pdf (accessed June 5, 2020) [<https://perma.cc/C8KG-P9CZ>].

(2007); *In re Admissibility of Motor Vehicle Speed Readings Produced by LTI Marksman 20-20 Laser Speed Detection Sys.*, 314 N.J.Super. 233, 252-253, 714 A.2d 381 (1998); *State v. de Macedo Soares*, 190 Vt. 549, 2011 VT 56, 26 A.3d 37, ¶ 10.

{¶ 18} Other substantive challenges to the results of a laser speed-measuring device—including challenges involving the angle at which the officer held the device in relation to the targeted vehicle, the device’s accuracy-validation algorithms, the device’s calibration and maintenance schedule, and the officer’s qualifications to use the device—implicate the sufficiency and weight of the evidence, not its admissibility. *See State v. Adams*, 103 Ohio St.3d 508, 2004-Ohio-5845, 817 N.E.2d 29, ¶ 80 (a court may admit DNA evidence without conducting a preliminary hearing; questions regarding the reliability of DNA evidence in a particular case go to the weight of the evidence, not its admissibility). Our decision today, that the results of a speed-measuring device using radar or laser technology are admissible in court without expert testimony establishing, or the court taking judicial notice of, the reliability of the scientific principles underlying that technology, leaves determinations involving the sufficiency and weight of the evidence to be made on a case-by-case basis.

Conclusion

{¶ 19} We hold that the results of a speed-measuring device using either radar or laser technology are admissible in court without expert testimony establishing, or the court taking judicial notice of, the reliability of the scientific principles underlying that technology. However, the factfinder is required to determine whether the evidence presented concerning the accuracy of the particular speed-measuring device and the qualifications of the person who used it is sufficient to support a conviction based on the device’s results. Accordingly, we answer the certified question in the affirmative and affirm the judgment of the Eighth District.

Judgment affirmed.

O’CONNOR, C.J., and FRENCH, FISCHER, DEWINE, and DONNELLY, JJ.,
concur.

KENNEDY, J., dissents, with an opinion.

KENNEDY, J., dissenting.

{¶ 20} The majority holds today that the state no longer needs to prove the scientific reliability of a laser speed-measuring device before the results of such a device can be used to convict a driver of a speeding offense. That is, the majority makes a policy determination to make it simpler for the state to make its case against defendants charged with speeding offenses. In reaching its conclusion, the majority relies on this court’s decision in *E. Cleveland v. Ferrell*, 168 Ohio St. 298, 154 N.E.2d 630 (1958), a case that predates both the Ohio Rules of Evidence and modern, leading caselaw like *Daubert v. Merrell Dow Pharmaceuticals, Inc.*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469 (1993), and *Miller v. Bike Athletic Co.*, 80 Ohio St.3d 607, 687 N.E.2d 735 (1998), which established standards that Ohio courts ordinarily use in evaluating the reliability of scientific evidence. Because the majority gives the state a free pass on one of the most essential parts of proving its case for a speeding offense—the reliability of the device that produced the results that will in effect determine the defendant’s guilt or lack of guilt—I dissent.

{¶ 21} This case comes to us through the judgment of the Eighth District Court of Appeals to certify a conflict among Ohio’s appellate districts regarding whether the state is required to prove the scientific reliability of laser speed-measuring devices before their results can be used in the prosecution of speeding cases. We recognized the conflict and ordered briefing on this issue:

“[W]hether the results of any speed measuring device, using either radar or laser technology, is admissible without expert testimony

establishing, or the taking of judicial notice of, the scientific reliability of the principles underlying the technology.”

2019-Ohio-768, 154 Ohio St.3d 1520, 118 N.E.3d 257, quoting 2018-Ohio-5028, ¶ 27.

{¶ 22} In Ohio, only the Eighth District has determined that the answer to that question is yes, 2018-Ohio-5028 at ¶ 23, although it has been at odds with itself over the years. See *Beachwood v. Joyner*, 2012-Ohio-5884, 984 N.E.2d 388, ¶ 15 (8th Dist.) (trial court erred by admitting testimony regarding results of moving radar speed-measuring device without the benefit of expert testimony when the scientific reliability of the particular model had not been established in a previous case). Ohio’s other appellate districts that have addressed the issue have determined that the state must prove the reliability of a laser speed-measuring device. See, e.g., *State v. McKay*, 1st Dist. Hamilton No. C–130657, 2014-Ohio-2027, ¶ 10; *State v. Helke*, 2015-Ohio-4402, 46 N.E.3d 188, ¶ 40 (2d Dist.); *State v. Zhovner*, 2013-Ohio-749, 987 N.E.2d 333, ¶ 25-26 (3d Dist.); *In re Z.E.N.*, 2018-Ohio-2208, 114 N.E.3d 594, ¶ 18 (4th Dist.); *State v. Lapsos*, 5th Dist. Ashland No. 2007-COA-045, 2008-Ohio-4489, ¶ 31-32; *State v. Jampani*, 6th Dist. Erie No. E-13-004, 2013-Ohio-5070, ¶ 19-20; *Campbell v. Rosario*, 2018-Ohio-337, 101 N.E.3d 681, ¶ 16 (7th Dist.); *State v. Freiteg*, 9th Dist. Wayne No. 07CA0082, 2008-Ohio-6573, ¶ 14-15; *Columbus v. Dawson*, 10th Dist. Franklin No. 99AP-589, 2000 WL 271766, *2-3 (Mar. 14, 2000); *State v. Allenbaugh*, 11th Dist. Ashtabula No. 2019-A-0017, 2020-Ohio-68, ¶ 41; *State v. Starks*, 196 Ohio App.3d 589, 2011-Ohio-2344, 964 N.E.2d 1058, ¶ 21-22 (12th Dist.). In those districts, the scientific reliability of a speed-measuring device can be established through expert testimony or judicial notice. See, e.g., *Rosario* at ¶ 16.

{¶ 23} Evid.R. 201(B) establishes the kind of facts that can be judicially noticed: “A judicially noticed fact must be one not subject to reasonable dispute in

that it is either (1) generally known within the territorial jurisdiction of the trial court or (2) capable of accurate and ready determination by resort to sources whose accuracy cannot reasonably be questioned.” In *Cincinnati v. Levine*, 158 Ohio App.3d 657, 2004-Ohio-5992, 821 N.E.2d 613 (1st Dist.), the First District determined that there are three general ways for a trial court to take judicial notice of the reliability of a speed-measuring device. The trial court may rely on “(1) a reported [trial court] decision, (2) a reported or unreported case from the appellate court, or (3) the previous consideration of expert testimony about a specific device where the trial court notes it on the record.” *Id.* at ¶ 10.

{¶ 24} If the scientific reliability of a particular speed-measuring device has not previously been established in an appellate district, a trial court in that district may instead also consider expert testimony regarding the device’s reliability pursuant to Evid.R. 702. Evid.R. 702 “vest[s] the trial court with the role of gatekeeper” and part of “[t]his gatekeeping function imposes an obligation upon a trial court to assess * * * the reliability of an expert’s methodology.” *Terry v. Caputo*, 115 Ohio St.3d 351, 2007-Ohio-5023, 875 N.E.2d 72, ¶ 24. In evaluating scientific reliability, the court applies the factors set forth in *Daubert*, 509 U.S. 579, 113 S.Ct. 2786, 125 L.Ed.2d 469:

The trial court should first assess whether the method or theory relied upon has been tested. [*Daubert*] at 593, 113 S.Ct. 2786, 125 L.Ed.2d 469. Next, it should consider whether the theory has been the subject of peer review, and then whether the method has a known or potential error rate. *Id.* at 593-594, 113 S.Ct. 2786, 125 L.Ed.2d 469. Finally, *Daubert* instructs trial courts to look at whether the theory has gained general acceptance in the scientific community. *Id.* at 594, 113 S.Ct. 2786, 125 L.Ed.2d 469. None of these factors, of course, is dispositive of the inquiry, and when

gauging the reliability of a given expert's testimony, trial courts should focus "solely on principles and methodology, not on the conclusions" generated. *Id.* at 595, 113 S.Ct. 2786, 125 L.Ed.2d 469.

Caputo at ¶ 25, quoting *Daubert* at 595.

{¶ 25} The majority rejects the methods Ohio's courts have been employing for years to evaluate evidence gathered from laser speed-measuring devices and dusts off *Ferrell*, which involved radar speed-measuring devices, to apply it in a different time to different technology. In doing so, the majority follows *Ferrell*'s dubious reasoning and converts the role of the trial court from gatekeeper to facilitator.

{¶ 26} In *Ferrell*, this court held that readings from stationary radar speed-detection devices "may be accepted into evidence * * * without the necessity of offering expert testimony as to the scientific principles underlying them." 168 Ohio St. at 303, 154 N.E.2d 630. That holding seems tied more to convenience than to science and the law.

{¶ 27} In *Ferrell*, the court began its analysis by setting forth the law regarding the use of scientific instruments in court:

Professor Wigmore, in *The Science of Judicial Proof*, at page 450, said:

"* * * since the additions made possible to our unaided senses are due to the use of instruments constructed on knowledge of scientific laws, it is plain that the correctness of the data thus obtainable must depend upon the correctness of the instrument in construction and the ability of the technical witness to use it. Hence,

the following three fundamental propositions apply to testimony based on the use of all such instruments:

A. *The type of apparatus purporting to be constructed on scientific principles must be accepted as dependable for the proposed purpose by the profession concerned in that branch of science or its related art.* This can be evidence by qualified expert testimony; or, if notorious, it will be judicially noticed by the judge without evidence.

B. *The particular apparatus used by the witness must be one constructed according to an accepted type and must be in good condition for accurate work.* This may be evidenced by a qualified expert.

C. *The witness using the apparatus as the source of his testimony must be one qualified for its use by training and experience.”*

(Emphasis sic.) *Id.* at 301, quoting Wigmore, *The Science of Judicial Proof* 450 (1937). But then the court quickly abandoned the Wigmore approach, instead joining a few other courts in deciding that the requirement of expert testimony to establish the scientific reliability of an instrument is too onerous. *Id.* at 301-303. It should be noted that there seems to have been lacking at the time that *Ferrell* was decided—which was prior to the adoption of the Ohio Rules of Evidence—the robust reliance on judicial notice that Ohio courts apply when facing the issue today. *See id.* The court’s focus in *Ferrell* was therefore on removing the requirement of expert testimony to prove scientific reliability. As this court stated, “There would appear to be developing a realization upon the part of courts that such expert testimony is no longer required.” *Id.* at 302.

{¶ 28} In reaching its decision in *Ferrell*, this court looked to the decision from the Supreme Court of New Jersey in *State v. Dantonio*, 18 N.J. 570, 115 A.2d 35 (1955):

The New Jersey court, quoting from Woodbridge, Radar in the Courts, 40 Virginia Law Review, 809, [wrote]:

“ ‘Under the Uniform Rules of Evidence, already approved by the American Bar Association at its 1953 meeting, judicial notice “shall be taken without request by a party * * * of such specific facts and propositions of generalized knowledge as are so universally known that they cannot reasonably be the subject of dispute.” Radar speed meters are now in this category. Why should the time of experts be wasted and the expenses of litigation be increased by compelling such men to appear in court after court telling the same truths over and over? While it is agreed that every reasonable doubt about the accuracy of new developments should promptly be resolved against them in the absence of expert evidence, there is no longer any such doubt concerning radar. Rather, the applicable maxim should now be, “What the world generally knows a court of justice may be assumed to know.” ’ ”

Ferrell at 302, quoting *Dantonio* at 578-579, quoting Woodbridge, Radar in the Courts, 40 Va.L.Rev. 809, 814 (1955).

{¶ 29} In *Ferrell*, this court also cited a decision of the highest court in New York:

The courts of New York, which have been reluctant to eliminate the necessity for expert testimony * * * have, as of January 16, 1958,

concluded the principle for that state. In the case of *People v. Magri*, 3 N.Y.2d 562, 170 N.Y.S.2d 335, 147 N.E.2d 728, the Court of Appeal said:

“We think the time has come when we may recognize the general reliability of the radar speed meter as a device for measuring the speed of a moving vehicle, and that it will no longer be necessary to require expert testimony in each case as to the nature, function or scientific principles underlying it.”

168 Ohio St. at 302-303, 154 N.E.2d 630, quoting *Magri* at 566.

{¶ 30} There is no indication that when *Ferrell* was decided in 1958, Ohio courts were—as they are now—regularly taking judicial notice of the reliability of speed-measuring devices after they had been deemed reliable in a prior case. In regard to laser speed-measuring devices, a court’s taking judicial notice under Evid.R. 201(B) of caselaw from the trial court’s appellate district establishing a device’s reliability makes it relatively easy for the state to avoid having to introduce expert testimony in every case involving a speed-measuring device. *Ferrell* was decided relatively early in the development of speed-detection technology and before the adoption of the Ohio Rules of Evidence. The rationale in *Ferrell* does not fit today.

{¶ 31} *Ferrell* was decided in an era during which there was a different standard for what scientific expert testimony had to prove. In that era, the leading case dealing with the admissibility of scientific evidence in a criminal trial was *Frye v. United States*, 293 F. 1013 (D.C.Cir.1923). The *Frye* court determined that the party offering the testimony must establish that the scientific principle involved has “gained general acceptance in the particular field in which it belongs.” *Id.* at 1014; see also *State v. Springer*, 8th Dist. Cuyahoga No. 33523, 1975 WL 182452, *2 (Apr. 24, 1975) (“The leading case dealing with the admissibility of scientific

evidence in a criminal trial is *Frye*”). And that standard of general acceptance dovetails with what this court decided in *Ferrell*; although the court in *Ferrell* did not cite *Frye*, it did rely on the general knowledge and acceptance of the efficacy of radar speed-measuring devices to reach its conclusion.

{¶ 32} But the admissibility of expert testimony is now controlled by Evid.R. 702, which does not allow expert testimony to be admitted merely on general acceptance of the scientific principle or technology in the particular field in which it belongs. Under the Ohio Rules of Evidence, “the inquiry as to reliability is appropriately directed, not to the correctness or credibility of the conclusions reached by the expert witness, but to the reliability of the principles and methods used to reach those conclusions.” 1994 Staff Note, Evid.R. 702.

{¶ 33} In *Miller*, 80 Ohio St.3d at 611, 687 N.E.2d 735, this court adopted from *Daubert* four factors to be considered by a court in evaluating the reliability of scientific evidence: (1) whether the theory or technique has been tested, (2) whether it has been subjected to peer review, (3) whether there is a known or potential rate of error, and (4) whether the methodology has gained general acceptance. As this court later stated, “[b]oth the United States Supreme Court in *Daubert* and this court in *Miller* were careful to emphasize that none of these factors is a determinative prerequisite to admissibility.” *State v. Nemeth*, 82 Ohio St.3d 202, 211, 694 N.E.2d 1332 (1998), citing *Miller* at 612-613, and *Daubert*, 509 U.S. at 593, 113 S.Ct. 2786, 125 L.Ed.2d 469. *Ferrell* purported to obviate the necessity for expert testimony in radar speed-measuring device cases, but its reasoning cannot obviate the necessity of expert testimony under the later adopted Evid.R. 702. The majority’s decision is not tied in any way to the Ohio Rules of Evidence.

{¶ 34} Moreover, the logic and workability of *Ferrell* are questionable. Although the scientific reliability of laser speed-measuring technology in general might be settled, that does not mean that any particular device that the state claims is a laser speed-measuring device actually employs that settled science. The

majority today accepts the reliability of the science underlying every laser speed-measuring device. But to which devices do the majority's acceptance apply? Who determines the baseline question of what constitutes a laser speed-measuring device? Is it the police officer? How does the person who identifies the device as a laser speed-measuring device make that identification unless he or she knows the scientific principles upon which the identification is based?

{¶ 35} Finally, the *Ferrell* court reasoned that accepting the reliability of radar speed-measuring devices was the same as accepting the reliability of other types of scientific principles or devices that might play a role in litigation:

We are in accord with the trend of the most recent decisions that readings of a radar speed meter may be accepted in evidence, just as we accept photographs, X rays, electroencephalographs, speedometer readings, and the like, without the necessity of offering expert testimony as to the scientific principles underlying them.

168 Ohio St. at 303, 154 N.E.2d 630. The majority's opinion today repeats that language, seemingly approvingly. In my view, the recognized reliability of photographs, X-rays, electroencephalographs, and speedometers is owed to the reliance that people put in those devices outside of litigation; those instruments were not designed to achieve convictions for the state. We trust them in court because we trust them in life to perform the everyday things they were designed to do outside the courtroom; their use in court is tangential to their normal purposes. Further, a typical trier of fact knows from experience that a camera captures a visual moment of reality, that an X-ray reveals the skeletal structure that we can feel, and that the sweeping second hand of a watch coincides with our sense of the passage of time. And unlike the use of speed-measuring devices in speeding cases, those instruments do not provide evidence going to the ultimate determination of guilt or

lack of guilt in most cases. A speed-measuring device, on the other hand, is designed to provide evidence against drivers—it answers the ultimate question of guilt or lack of guilt in a speeding case.

{¶ 36} Indeed, R.C. 4511.091(C)(1) precludes a person from being arrested, charged, or convicted based on a police officer’s unaided visual estimation of the speed of a motor vehicle and requires the officer to use a “stopwatch, radar, laser, or other electrical, mechanical, or digital device to determine the speed of a motor vehicle.” A laser speed-measuring device registers a number on the device’s screen, and if the number is high enough then the vehicle’s driver can be charged and convicted for violating the law. There is no logical connection between the number that appears on the screen and a person’s observance of a moving vehicle. Without an expert’s explanation of how a particular speed-measuring device works, we have no reason to trust that the number on the screen is an accurate determination of a vehicle’s speed or that the device’s results are reliable.

{¶ 37} We are not faced with a tide of decisions from other jurisdictions that allow the results of a laser-speed measuring device to be admitted into evidence without first establishing the device’s reliability. The majority lists decisions from just three states’ highest courts announcing a rule like the majority announces today: Idaho, Maryland, and Vermont. Other states deal with the issue legislatively. For instance, a Georgia statute states that laser speed-measuring devices that have been approved by its department of public safety and included on a list prepared by the department “shall be considered scientifically acceptable and reliable as a speed detection device and shall be admissible for all purposes in any court, judicial, or administrative proceedings in this state.” Ga.Code Ann. 40-14-17. Connecticut has a similar statute. *Compare* Conn.Gen.Stat. 14-219c (providing prima facie presumption of device’s accuracy if device has been approved by commissioner of emergency services and public protection). Ohio provides a similar list of approved breathalyzer devices used to measure breath-alcohol concentration. Ohio

Adm.Code 3701-53-02. Both Virginia and Maine have enacted statutes providing that the results of a laser speed-measuring device are prima facie evidence that the vehicle measured was traveling at the reported speed. Va.Code Ann. 46.2-882; Me.Rev.Stat.Ann. Title 29-A, Section 2075.

{¶ 38} Those are policy decisions appropriately and best dealt with by the General Assembly. “It is a fundamental precept of our tripartite form of state government that the General Assembly is the ultimate arbiter of public policy.” *Cleveland v. State*, 157 Ohio St.3d 330, 2019-Ohio-3820, 136 N.E.3d 466, ¶ 40. Absent legislation by the General Assembly, we should address the use of laser speed-measuring devices in Ohio’s courts by employing the Ohio Rules of Evidence. The state should have to demonstrate that the laser speed-measuring devices it employs to convict defendants charged with speeding offenses are reliable. Once the reliability of a particular device has been proven in court through expert testimony, the court can thereafter take judicial notice to recognize the reliability of the device. But the court should not be permitted to cut corners by hearing no evidence of the reliability of a particular speed-measuring device when the device’s reliability has not previously been established.

{¶ 39} In this case, I would hold that the lack of expert-testimony foundation regarding the reliability of the speed-measuring device used to convict appellant, Joseph G. Rodojev, constituted plain error implicating the sufficiency of the evidence. See, e.g., *Z.E.N.*, 2018-Ohio-2208, 114 N.E.3d 594, at ¶ 22, citing *State v. Cleavenger*, 2018-Ohio-446, 93 N.E.3d 1027, ¶ 25 (7th Dist.). Accordingly, I would reverse the Eighth District’s judgment and vacate Rodojev’s conviction. Therefore, I dissent.

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Zach Klein, Columbus City Attorney, and Lara Baker-Morrish, Solicitor General, Columbus Department of Law; Lisa Okolish Miller, Barberton Director of Law; Anthony L. Geiger, Lima Director of Law; Jeanine Hummer, Upper Arlington City Attorney; Mitchell H. Banchefsky, New Albany Director of Law; Darren Shulman, Delaware City Attorney; and Tracy W. Meek, Athens Chief City Prosecuting Attorney, urging affirmance for amici curiae city of Columbus, city of Barberton, city of Lima, city of Upper Arlington, city of New Albany, city of Delaware, and city of Athens.

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